

Reference should not be
made from this

PART B
SOLAR - GEOPHYSICAL DATA

ISSUED
APRIL 1958

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
CENTRAL RADIO PROPAGATION LABORATORY
BOULDER, COLORADO

SOLAR - GEOPHYSICAL DATA

CONTENTS

INTRODUCTION

Description of Tables and Graphs

I DAILY SOLAR INDICES

- (a) Relative Sunspot Numbers and 2800 Mc Solar Flux
- (b) Graph of Sunspot Cycle

II SOLAR CENTERS OF ACTIVITY

- (a) Calcium Plage and Sunspot Regions
- (b) Coronal Line Emission Indices

III SOLAR FLARES

- (a-k) Optical Observations
 - (l) Flare Patrol Observations
 - (m) Subflares
 - (n) Ionospheric Effects

IV SOLAR RADIO WAVES

- (a,b) 2800 Mc -- Outstanding Occurrences (Ottawa)
- (c) 2800 Mc -- Times of Observations (Ottawa)
- (d) 200 Mc -- Daily Data (Cornell) March 1958
- (e) 200 Mc -- Outstanding Occurrences (Cornell) March 1958
- (f) 167 Mc -- Daily Data (Boulder) February 1958
- (g,h) 167 Mc -- Outstanding Occurrences (Boulder) February 1958
- (i) 470 Mc -- Daily Data (Boulder) February 1958
- (j) 470 Mc -- Outstanding Occurrences (Boulder) February 1958

V GEOMAGNETIC ACTIVITY INDICES

- (a) C, Kp, Ap, and Selected Quiet and Disturbed Days
- (b) Charts of Kp by Solar Rotations

VI RADIO PROPAGATION QUALITY INDICES

North Atlantic:

- (a) CRPL Quality Figures and Forecasts
- (b) Graphs Comparing Forecast and Observed Quality
- (c,d) Graphs of Useful Frequency Ranges

North Pacific:

- (e) CRPL Quality Figures and Forecasts
- (f) Graphs Comparing Forecast and Observed Quality

VII ALERT PERIODS AND SPECIAL WORLD INTERVALS

- (a) IGY World Warning Agency Decisions for Alerts and SWI

SOLAR - GEOPHYSICAL DATA

INTRODUCTION

This monthly report series is intended to keep research workers abreast of the major particulars of solar activity and the associated ionospheric, radio propagation and other geophysical effects. It is made possible through the cooperation of many observatories, laboratories and agencies as recorded in the detailed description of the tables and graphs which follows. The report is edited by Miss J. V. Lincoln of the Sun-Earth Relationships Section.

I DAILY SOLAR INDICES

Relative Sunspot Numbers -- The table includes (1) the daily American relative sunspot numbers, R_A' , as compiled by the Solar Division of the American Association of Variable Star Observers, and (2) the provisional daily Zürich relative sunspot numbers, R_Z , as communicated by the Swiss Federal Observatory. Because of the time required to collect and reduce the observations, R_A' will normally appear one month later than R_Z .

The relative sunspot number is an index of the activity of the entire visible disk. It is determined each day without reference to preceding days. Each isolated cluster of sunspots is termed a sunspot group and it may consist of one or a large number of distinct spots whose size can range from 10 or more square degrees of the solar surface down to the limit of resolution (e.g. $1/8$ square degrees). The relative sunspot number is defined as $R=K(10g+s)$, where g is the number of sunspot groups and s is the total number of distinct spots. The scale factor K (usually less than unity) depends on the observer and is intended to effect the conversion to the scale originated by Wolf. The observations for sunspot numbers are made by a rather small group of extraordinarily faithful observers, many of them amateurs, each with many years of experience. The counts are made visually with small, suitably protected telescopes.

Final values of R_Z appear in the IAU Quarterly Bulletin on Solar Activity, the Journal of Geophysical Research and elsewhere. They usually differ slightly from the provisional values. The American numbers, R_A' , are not revised.

Solar Flux Values, 2800 Mc -- The table also lists the daily values of solar flux at 2800 Mc recorded in watts/ M^2 /cycle/second bandwidth ($\times 10^{-22}$) in two polarizations by the National Research Council at Ottawa, Canada. These solar radio noise indices are being published in accordance with CCIR Report 25 that a basic solar index for ionospheric propagation should be measured objectively and "preferably refer to a property of the sun such as radiation flux which has direct physical relationship to the ionosphere."

Graph of Sunspot Cycle -- The graph illustrates the recent trend of Cycle 19 of the 11-year sunspot cycle and some predictions of the future level of activity. The customary "12-month" smoothed index, R , is used throughout, the data being final R_Z numbers except for the current year. Predictions shown are those made for one year after the latest available datum by the method of A. G. McNish and J. V. Lincoln (Trans. Am. Geophys. Union, 30, 673-685, 1949) modified by the use of regression coefficients and mean cycle values recomputed for Cycles 8 through 18. Cycle 19 began April 1954, when the minimum R of 3.4 was reached.

II SOLAR CENTERS OF ACTIVITY

Calcium Plage and Sunspot Regions -- The table gives particulars of the centers of activity visible on the solar disk during the preceding month. These are based on estimates made and reported on the day of observation and are therefore of limited reliability.

The table gives the heliographic coordinates of each center (taken as the calcium plage unless two or more significantly and individually active sunspot groups are included in an extended plage) in terms of the Greenwich date of passage of the sun's central meridian (CMP) and the latitude; the serial number of the plage as assigned by McMath-Hulbert Observatory; the serial number of the center in the previous solar rotation, if it is a persisting region; particulars of the plage at CMP: area, central intensity; a summary of the development of the plage during the current transit of the disk, where b = born on disk, l = passed to or from invisible hemisphere, d = died on disk, and $/$ = increasing, $-$ = stable, \backslash = decreasing; and age in solar rotations; particulars of the associated sunspot group, if any, at CMP: area and spot count and the summary of development during the current disk transit, similar to the above. The unit of area is a millionth of the area of a solar hemisphere; the central intensity of calcium plages is roughly estimated on a scale of 1 = faint to 5 = very bright.

Calcium plage data are available through the cooperation of the McMath-Hulbert Observatory of the University of Michigan and the Mt. Wilson Observatory. The sunspot data are compiled from reports from the U. S. Naval Observatory, Mt. Wilson Observatory, and from reports from Europe and Japan received through the daily Ursigram messages.

Coronal Line Emission Indices -- In the table are summarized solar coronal emission intensity indices for the green (Fe XIV at $\lambda 5303$) and red (Fe X at $\lambda 6374$) coronal lines. The indices are based on measurements made at 5° intervals around the periphery of the solar disk by the High Altitude Observatory at Climax, Colorado, and by Harvard University observers at Sacramento Peak (The USAF Upper Air Research Observatory at Sunspot, New Mexico, under contract AF 19(604)-146). The measurements are expressed as the number of millionths of

an Angstrom of the continuum of the center of the solar disk (at the same wavelength as the line) that would contain the same energy as the observed coronal line. The indices have the following meanings:

G_6 = mean of six highest line intensities in quadrant for $\lambda 5303$.

R_6 = same for $\lambda 6374$.

G_1 = highest value of intensity in quadrant, for $\lambda 5303$.

R_1 = same for $\lambda 6374$.

The dates given in the table correspond to the approximate time of CMP of the longitude zone represented by the indices. The actual observations were made for the North East and South East quadrants 7 days before; for the South West and North West quadrants 7 days after the CMP date given.

To obtain rough measures of the integrated emission of the entire solar disk in either of the lines, assuming the coronal changes to be small in a half solar rotation, it is satisfactory to perform the following type of summation given in example for 15 October:

$$\left(\text{MEAN DISK EMISSION} \right)_{\text{IN } \lambda 5303} \Big|_{15 \text{ OCT}} = \frac{1}{N} \left[\sum_{15 \text{ OCT}}^{22 \text{ OCT}} \left\{ (G_6)_{\text{NE}} + (G_6)_{\text{SE}} \right\} + \sum_{8 \text{ OCT}}^{14 \text{ OCT}} \left\{ (G_6)_{\text{SW}} + (G_6)_{\text{NW}} \right\} \right]$$

where N is the number of indices entering the summation.

Such integrated disk indices as well as integrated whole-sun indices are computed for each day and are published quarterly in the "Solar Activity Summary" issued by the High Altitude Observatory at Boulder, Colorado. In the same reports are given maps of the intensity distribution of coronal emission derived from all available Climax and Sacramento Peak observations, as well as other information on solar activity, such as maps made from daily limb prominence surveys in $H\alpha$ and notes regarding the history of active regions on the solar disk.

Preliminary summaries of solar activity, prepared on a fast schedule, are issued Friday of each week from High Altitude Observatory in conjunction with CRPL and include solar activity through the preceding day. These are useful to groups needing information on the current status of activity on the visible solar disk, but are not recommended for research uses unless such a prompt schedule of reporting is essential. The same information is included in the subsequent quarterly reports, with extensive additions, corrections and evaluations.

III SOLAR FLARES

Optical Observations -- The table presents the preliminary record of solar flares as reported to the CRPL on a rapid schedule at the sacrifice of detailed accuracy. Definitive and complete data are published later in the Quarterly Bulletin on Solar Activity, I.A.U., in various observatory publications and elsewhere. The present listing serves to identify and roughly describe the phenomena observed.

Reporting directly to the CRPL are the following observatories: McMath-Hulbert, Wendelstein, Sacramento Peak, Mitaka and Swedish Astrophysical Station on Capri. The remainder report through the URSIgram centers or are available through the IGY World Data Center for Solar Activity in Boulder. Observations are in the light of the center of the H-alpha line unless noted otherwise. The reports from Sacramento Peak, New Mexico (communicated to CRPL by the High Altitude Observatory at Boulder) are from observations at the USAF Upper Air Research Observatory at Sunspot, New Mexico, by Harvard University observers, under contract AF 19(604)-146.

For each flare are listed the reporting observatory, the date, beginning and ending times, time of maximum phase, the heliographic coordinates in degrees, McMath serial number of the region, duration, the flare importance on the IAU scale of 1- to 3+, observing conditions where 1 means poor, 2 fair and 3 good, time of measurement for tabulated width of H α or tabulated area, measured (i.e. projected) maximum area in square degrees, corrected maximum area in square degrees which equals measured area times secant h where h is the heliocentric angle, maximum effective line-width in H α expressed in Angstroms, and maximum intensity of H α expressed in per cent of the continuous spectrum. The following symbols are used in the table:

D = Greater than
E = Less than

F = Approximately
G = Plus

A final column lists provisionally the occurrence of simultaneous ionospheric effects as observed on selected field-strength recordings of distant high-frequency radio transmissions; a more nearly definitive list of these ionospheric effects, including particulars, appears in these reports after the lapse of a month (see below). All times are Universal Time (UT or GCT). Subflares (importance 1-) are listed by date, time of beginning and their heliographic coordinates. A graph presents intervals for which there were no patrols for flare observations from the observatories whose complete data are published in the table.

Ionospheric Effects -- SID (and GID--gradual ionospheric disturbances) may be detected in a number of ways: short wave fadeouts, enhancement of low frequency atmospherics, increases in cosmic absorption, and so forth. The table lists events that have been recognized on field-strength recordings of distant high-frequency radio transmissions.

Under a coordinated program, the staffs at the following ionospheric sounding stations contribute reports that are screened and synthesized at CRPL-Boulder: Puerto Rico, Ft. Belvoir, Va., and Anchorage, Alaska (CRPL Stations: PR, BE, AN); Huancaayo, Peru, and College, Alaska (CRPL-Associated Laboratories: HU, CO); and White Sands, N. Mex., Adak, Alaska, and Okinawa (U.S. Signal Corps Stations: WS, AD, OK). McMath-Hulbert Observatory (MC) also contributes such reports. In addition, reports are volunteered by RCA Communications Inc., Marconi Wireless, Netherlands Postal and Telecommunications Services, Swedish Telecommunications, and others; these usually specify times of SID and the radio paths involved.

In the coordinated program, the abnormal fades of field strength not obviously ascribable to other causes, are described as short wave fadeouts with the following further classification:

- S-SWF: sudden drop-out and gradual recovery
- Slow S-SWF: drop-out taking 5 to 15 minutes and gradual recovery
- G-SWF: gradual disturbance; fade irregular in both drop-out and recovery.

When there is agreement among the various reporting stations on the time (UT) of an event, it is accepted as a widespread phenomenon and listed in the table.

The degree of confidence in identifying the event, a subjective estimate, is reported by the stations and this is summarized in an index of certainty that the event is widespread, ranging from 1 (possible) to 5 (definite). The times given in the table for the event are from the report of a station (underlined in table) that identified it with high confidence. The criteria for the subjective importance rating assigned by each station on a scale of 1- to 3+ include amplitude of the fade, duration and confidence; greater consideration is given to reports on paths near the subsolar point in arriving at the summary importance rating given in the table.

Note: The tables of SID observed at Washington included in CRPL F-reports prior to F-135 were restricted to events classed here as S-SWF.

IV SOLAR RADIO WAVES

2800 Mc Observations

The data on solar radio wave events made in Ottawa, Canada by the Radio and Electrical Engineering Division of the National Research Council (A. E. Covington) at 2800 Mc (10-cm emission) are presented. Near local noon (about 1700 UT) the sensitivity of the radiometer is determined and a mean flux for the whole day calculated. These values are given in a tabular form (see table I-1) in units of 10^{-22} watts/M²/c/s. Burst phenomena are measured above this level and are given in terms especially suitable for the variations

observed on this frequency. The basis for the classifications is described by Covington - J.R. Astro. Soc. Can. 45, 49, 1951 and Dodson, Hedeman and Covington, Ap. J. 119, 541, 1954. A modification in terminology with a view to simplification has been introduced and consists essentially of the omission of the descriptive word "Single" from the "Single-Simple" and "Single-Complex" classes; in designating the "Single", "Single-Simple" and "Rise and Fall" bursts into a single classification designated as "Simple Bursts" with an appropriate type number; in the addition of the letter "f" to indicate that the burst deviates from the basic pattern by the presence of one or more small fluctuations in intensity; and by the addition of the letter "A" to indicate that the event has another smaller duration event superimposed upon it.

Simple Burst

Any single burst which rises to one maximum and then decreases to the pre-burst level.

1 - Simple 1 -- Simple burst, type 1 (formerly "single"). Bursts of intensity less than 7 1/2 flux units and duration less than 7 1/2 minutes.

2 - Simple 2 -- Simple burst, type 2 (formerly "single-simple"). Bursts of impulsive nature with intensity greater than 7 1/2 flux units.

3 - Simple 3 -- Simple burst, type 3 (formerly "rise and fall"). Bursts of moderate intensity with duration greater than 7 1/2 minutes.

4 - Post-burst increase -- Postburst level is greater than the preburst level. The gradual return to normal flux may require as long as several hours.

5 - Absorption following burst (negative post).

6 - Complex -- (formerly "single-complex"). A single burst which shows two or more comparable maxima before the activity has declined to zero.

7 - Period of irregular activity or fluctuations -- Series of overlapping bursts of moderate intensity and duration.

8 - Group -- Series of single isolated bursts occurring in succession with intensity between the events equal to the level before and after the group.

9 - Precursor -- A small increase of intensity occurring before a larger increase.

Great Burst

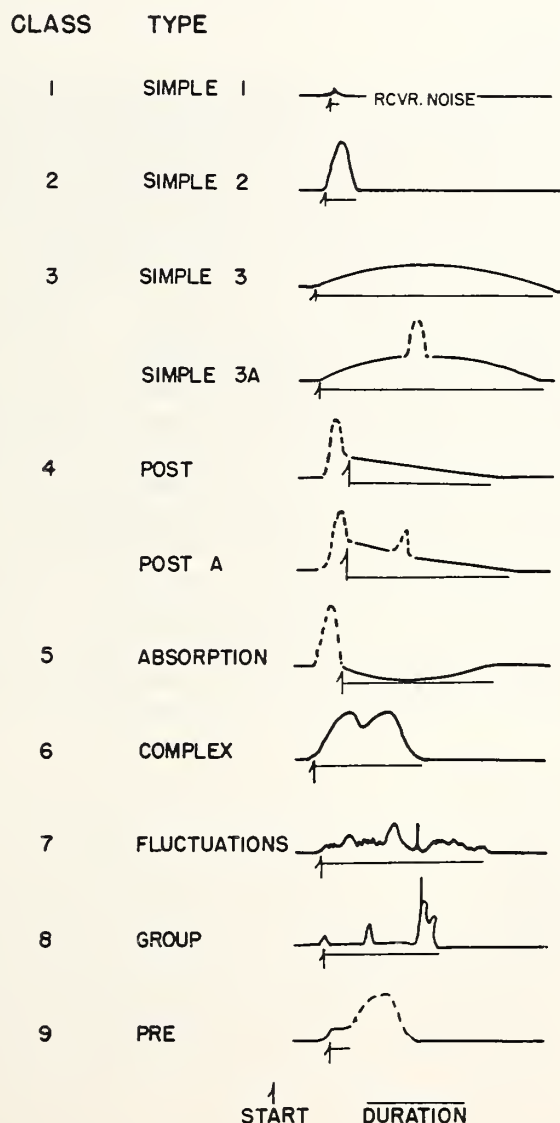
Infrequently occurring bursts of great intensity, often of complicated structure.

Letter "A"

Indicates that this event has another event superimposed upon it.

Letter "f"

Indicates that the basic form of the event is modified by secondary fluctuations.



200 Mc Observations

Data on solar radio waves made at Cornell University, Ithaca, N.Y. (Marshall Cohen) on 201.5 Mc are presented. All times are in Universal Time (UT or GCT). The antenna is linearly polarized and has a pattern appreciably broader than the solar disk. Flux is reported in units of 10^{-22} watts/m²/cps and the tabulated numbers are twice the values observed in the one linear component.

Tables of flux and outstanding occurrences are given in general according to the systems used for the NBS 170 Mc and 450 Mc data.

170 Mc and 450 Mc Observations

Data on solar radio emission at the nominal frequencies of 170 Mc and 450 Mc recorded at the Gunbarrel Hill (Boulder) station of the National Bureau of Standards (R.S. Lawrence) are presented. The half width of the antenna lobe is appreciably greater than the solar disk. Polarization is not determined, but the dipole is oriented E-W. All times are in Universal Time (UT or GCT).

3-Hourly and Daily Flux Density and Variability -- Flux density is given in power units. These units are approximately 10^{-22} watts meter⁻²(c/s)⁻¹ for both polarizations together. They will be subject to a correction factor when gain measurements of the antenna have been made. The median flux is measured for every one-hour period having at least thirty minutes of usable record and an applicable gain calibration. A three-hour value of flux is obtained by averaging the available one-hour medians (at least two required). A daily value of flux is obtained by averaging all available one-hour medians (at least four required). A dash indicates that insufficient measurements were made to meet the above requirements or that the records were not of usable quality. Flux values may be followed by the qualifying symbols D, S, and X defined subsequently.

The variability index, given for each three-hour interval, is on a scale 0 to 3 defined as follows:

0 - The instantaneous flux did not drop below one-half the median level or exceed twice the median level at any time.

1 - The instantaneous flux made from one to ten excursions

outside the range described above.

2 - The instantaneous flux made from ten to one hundred excursions outside the range described above.

3 - The instantaneous flux made more than one hundred excursions outside the range described above.

For the purpose of the variability index, an excursion whose maximum intensity is M times the median level is counted as M excursions. The variability index is omitted if measurements were made for less than one hour during the period. The variability for the day is the mean of the three-hourly values. The letter S follows variability indices which are in doubt because of atmospheric or local interference.

The observing periods are given in U. T. to the nearest 1/10 hour and they usually extend into the next Greenwich day.

Outstanding Occurrences -- A separate table lists the occurrences which are not adequately described by the three-hourly values of flux density and variability. Two classifications are given: (1) A system in general accord with that described and illustrated by Dodson, Hedeman, and Owren (Ap. J. 118, 169, 1953) and (2) the system described in the IGY Solar Activity Instruction Manual, prepared by the Radio Emission editor of the I.A.U. Quarterly Bulletin on Solar Activity.

In system (1) the occurrences are identified by numbers which do not necessarily indicate the magnitude of the event, as follows:

0 - Rise in base level -- A temporary increase in the continuum with duration of the order of tens of minutes to an hour.

1 - Series of bursts -- Bursts or groups of bursts, occurring intermittently over an interval of time of the order of minutes or hours. Such series of bursts are assigned as distinctive events only when they occur on a smooth record or show as a distinct change in the activity.

2 - Groups of bursts -- A cluster of bursts occurring in an interval of time of the order of minutes.

3 - Minor burst -- A burst of moderate or small amplitude, and duration of the order of one or two minutes.

4 - Minor burst and second part -- A double rise in flux in which the early rise is a minor burst.

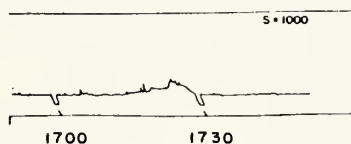
6 - Noise storm -- A temporary increase in radiation characterized by numerous closely spaced bursts, by an increase in the continuum, or by both. Duration is of the order of hours or days.

7 - Noise storm begins -- The onset of a noise storm occurs at some time during the observing period.

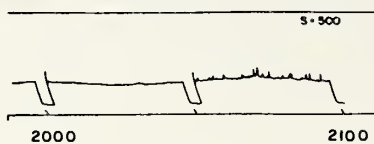
8 - Major burst -- An outburst, or other burst of large amplitude and more than average duration. A major burst is usually complex, with a duration of the order of one to ten minutes.

9A, 9B, or 9 - Major burst and second part or large event without distinct first and second parts -- If there is a double rise in flux, the first part, a major burst, is listed as 9A and the second part as 9B. The second part may consist of a rise in base level, a group or series of bursts, a noise storm. A major increase in flux with duration greater than ten minutes but without distinct first and second parts, is listed simply as 9.

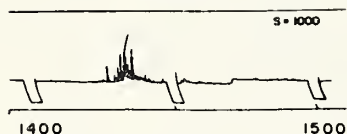
O-RISE IN BASE LEVEL



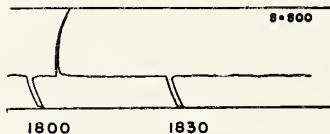
I - SERIES



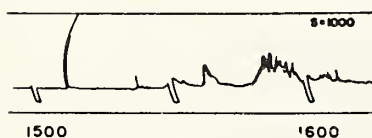
2 - GROUP



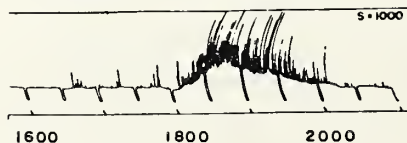
3 - MINOR



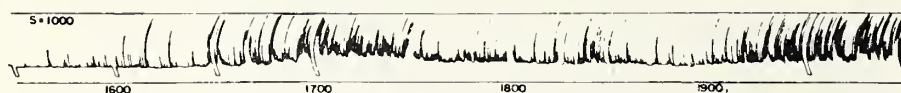
4 - MINOR+



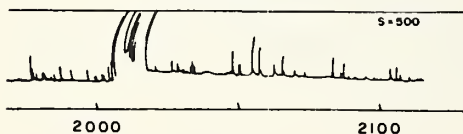
7-ONSET OF NOISE STORM



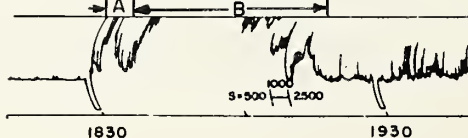
6-NOISE STORM IN PROGRESS



8 - MAJOR



9-MAJOR +



In system (2) combinations of the following letters are used to describe some distinctive characteristics of the recorded disturbances:

- S = simple rise and fall of intensity,
- C = complex variation of intensity,
- A = appears to be part of general activity,
- D = distinct from (i.e. apparently superimposed upon) the general background,
- M = multiple peaks separated by relatively long periods of quietness,
- F = multiple peaks separated by relatively short periods of quietness,
- E = sudden commencement or rise of activity.

Starting and maximum times are read to the nearest 1/10 minute if they are very definite and otherwise to the nearest minute. If the duration is less than five minutes, it is given to the nearest 1/10 minute; otherwise to the nearest minute (see also qualifying symbols below).

Maximum flux densities are given in units of 10^{-22} watts meter⁻²(c/s)⁻¹. The instantaneous maximum flux density is the highest peak in the disturbance measured above the sky level. The smoothed maximum flux density is the maximum value of a smooth curve drawn through the outstanding occurrence with a smoothing period of 20 to 50 percent of the total duration; it is measured above the estimated level in the absence of the disturbance. The intention is that (smoothed maximum) x (duration) should give a measure of the energy radiated in the disturbance.

A dash indicates missing or insignificant data. Observations are interrupted during the period from 26 to 29 minutes after each hour for calibrations. Observing periods are given in the Daily Data tables. The following qualifying symbols are used:

- B - Event in progress before observations began.
- D - Greater than.
- I - Event apparently continued during an interruption of the observations. The period of the interruption may be given in the remarks.
- N - See footnotes.
- X - Measurement is uncertain or doubtful.
- S - Measurement may be influenced by interference or atmospherics.

V GEOMAGNETIC ACTIVITY INDICES

C, Kp, Ap, and Selected Quiet and Disturbed Days -- The data in the table are: (1) preliminary international character figures, C; (2) geomagnetic planetary three-hour range indices, Kp; (3) daily "equivalent amplitude," Ap; (4) magnetically selected quiet and disturbed days.

This table is made available by the Committee on Characterization of Magnetic Disturbance of IAGA, IUGG. The Meteorological Office, De Bilt, Holland collects the data from magnetic observatories distributed throughout the world, and compiles C and selected days. The Chairman of the Committee computes the planetary and equivalent amplitude indices. The same data are also published quarterly in the Journal of Geophysical Research along with data on sudden commencements (sc) and solar flare effects (sfe).

The C-figure is the arithmetic mean of the subjective classification by all observatories of each day's magnetic activity on a scale of 0 (quiet) to 2 (storm).

Kp is the mean standardized K-index from 12 observatories between geomagnetic latitudes 47 and 63 degrees. The scale is 0 (very quiet) to 9 (extremely disturbed), expressed in thirds of a unit, e.g. 5- is $4\frac{2}{3}$, 5o is $5\frac{0}{3}$, and 5+ is $5\frac{1}{3}$. This planetary index is designed to measure solar particle-radiation by its magnetic effects, specifically to meet the needs of research workers in the ionospheric field. A complete description of Kp has appeared in Bulletin 12b, "Geomagnetic Indices C and K, 1948" of the Association of Terrestrial Magnetism and Electricity (IATME), International Union of Geodesy and Geophysics.

Ap is a daily index of magnetic activity on a linear scale rather than on the quasi-logarithmic scale of the K-indices. It is the average of the eight values of an intermediate 3-hourly index "ap," defined as one-half the average gamma range of the most disturbed of the three force components, in the three-hour interval at standard stations; in practice, ap is computed from the Kp for the 3-hour interval. The extreme range of the scale of Ap is 0 to 400. The method is described in IATME Bulletin No. 12h (for 1953) p. viii f. Values of Ap (like Kp and Cp) have been published for the Polar Year 1932/33 and for the years 1937 onwards.

The magnetically quiet and disturbed days are selected in accordance with the general outline in Terr. Mag. (predecessor to J. Geophys. Res.) 48, pp 219-227, December 1943. The method in current use calls for ranking the days of a month by their geomagnetic activity as determined from the following three criteria with equal weight: (1) the sum of the eight Kp's; (2) the sum of the squares of the eight Kp's; and (3) the greatest Kp.

Chart of Kp by Solar Rotations -- The graph of Kp by solar rotations is furnished through the courtesy of Dr. J. Bartels, Geophysikalisches Institute, Göttingen.

VI RADIO PROPAGATION QUALITY INDICES

One can take as the definition of a radio propagation quality index: the measure of the efficiency of a medium-powered radio circuit operated under ideal conditions in all respects, except for the variable effect of the ionosphere on the propagation of the transmitted signal. The indices given here are derived from monitoring and circuit performance reports, and are the nearest practical approximation to the ideal index of propagation quality.

Quality indices are usually expressed on a scale that ranges from one to nine. Indices of four or less are generally taken to represent significant disturbance. (Note that for geomagnetic K-indices, disturbance is represented by higher numbers.) The adjectival equivalents of the integral quality indices are as follows:

1 = useless	4 = poor-to-fair	7 = good
2 = very poor	5 = fair	8 = very good
3 = poor	6 = fair-to-good	9 = excellent

CRPL forecasts are expressed on the same scale. The tables summarizing the outcome of forecasts include categories P-Perfect; S-Satisfactory; U-Unsatisfactory; F-Failure. The following conventions apply:

P - forecast quality equal to observed	U - forecast quality two or more grades different from observed when <u>both</u> forecast and observed were > 5 , or both < 5
S - forecast quality one grade different from observed	F - other times when forecast quality two or more grades different from observed

Full discussion of the reliability of forecasts requires consideration of many factors besides the over-simplified summary given.

The quality figures represent a consensus of experience with radio propagation conditions. Since they are based entirely on monitoring or traffic reports, the reasons for low quality are not necessarily known and may not be limited to ionospheric storminess. For instance, low quality may result from improper frequency usage for the path and time of day. Although, wherever it is reported, frequency usage is included in the rating of reports, it must often

be an assumption that the reports refer to optimum working frequencies. It is more difficult to eliminate from the indices conditions of low quality for reasons such as multipath or interference. These considerations should be taken into account in interpreting research correlations between the Q-figures and solar, auroral, geomagnetic or similar indices.

North Atlantic Radio Path -- The CRPL quality figures, Q_a , are compiled by the North Atlantic Radio Warning Service (NARWS), the CRPL forecasting center at Ft. Belvoir, Virginia, from radio traffic data for North Atlantic transmission paths closely approximating New York-to-London. These are reported to CRPL by the Canadian Defense Research Board, Canadian Broadcasting Corporation, and the following agencies of the U. S. Government:--Coast Guard, Navy, Army Signal Corps, U. S. Information Agency. Supplementing these data are CRPL monitoring, direction-finding observations and field-strength measurements of North Atlantic transmissions made at Belvoir.

The original reports are submitted on various scales and for various time intervals. The observations for each 6-hour interval are averaged on the original scale. These 6-hour indices are then adjusted to the 1 to 9 quality-figure scale by a conversion table prepared by comparing the distribution of these indices for at least four months, usually a year, with a master distribution determined from analysis of the reports originally made on the 1 to 9 quality-figure scale. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. The 6-hourly quality figure is the mean of the reports available for that period.

The 6-hourly quality figures are given in this table to the nearest one-third of a unit, e.g. 5.0 is 5 and 0/3; 5- is 4 and 2/3; 5+ is 5 and 1/3. Other data included are:

(a) Whole-day radio quality indices, which are weighted averages of the four 6-hourly indices, with half weight given to quality grades 5 and 6. This procedure tends to give whole-day indices suitable for comparison with whole-day advance forecasts which seek to designate the days of significant disturbance or unusually quiet conditions.

(b) Short-term forecasts, issued every six hours by the North Atlantic Radio Warning Service. These are issued one hour before 00^h, 06^h, 12^h, 18^h, UT and are applicable to the period 1 to 7 hours ahead.

(c) Advance forecasts, issued twice weekly by the NARWS (CRPL-J reports) and applicable 1 to 3 or 4 days ahead, 4 or 5 to 7 days ahead, and 8 to 25 days ahead. These forecasts are scored against the whole-day quality indices.

(d) Half-day averages of the geomagnetic K indices measured by the Fredericksburg Magnetic Observatory of the U. S. Coast and Geodetic Survey.

A chart compares the short-term forecasts with Qa-figures. A second chart compares the outcome of advance forecasts (1 to 3 or 4 days ahead) with a type of "blind" forecast. For the latter, the frequency for each quality grade, as determined from the distribution of quality grades in the four most recent months of the current season, is partitioned among the grades observed in the current month in proportion to the frequencies observed in the current month.

Ranges of useful frequencies on the North Atlantic radio path are shown in a series of diagrams, one for each day. The shaded area indicates the range of frequencies for which transmissions of quality 5 or greater were observed. The blacker the diagram, the quieter the day has been; a narrow strip indicates either high LUHF, low MUF, or both. These diagrams are based on data reported to CRPL by the German Post Office through the Fernmeldetechnischen Zentralamt, Darmstadt, Germany, being observations every one and a half hours of selected transmitters located in the eastern portion of North America. Since January 6, 1958 the transmitters monitored are restricted to those located north of 39° latitude. The magnetic activity index, A_{FR} , from Fredericksburg, Va., is also given for each day.

Note: Beginning with data for September 1955, Qa has been determined from reports that are available within a few hours or at most within a few days, including for the first time, the CRPL observations. Therefore these are the indices by which the forecasters assess every day the conditions in the recent past. Over a period of several years, they have closely paralleled the former Qa indices which excluded CRPL observations and included three additional reports received after a considerable lag. Qa was first published to the nearest one-third of a unit at the same time.

North Pacific Radio Path -- The CRPL quality figures, Qp, are compiled by the North Pacific Radio Warning Service (NPRWS), the CRPL forecasting center at Anchorage, Alaska, from radio traffic data for moderately long transmission paths in the North Pacific equivalent to Seattle-to-Anchorage or Anchorage-to-Tokyo. These include reports to CRPL by the Alaska Communications System, Aeronautical Radio, Inc., U. S. Air Force and Civil Aeronautical Administration. In addition, there are CRPL monitoring, direction finder observations and field strength measurements of suitable transmissions.

The original reports are on various scales and for various time intervals. The observations for each 8 hours or 24 hour period are averaged on the original scale. This average is compared with reports for the same period in the preceding two months and expressed

as a deviation from the 3-month mean. The deviations are put on the 1 to 9 scale of quality which is assumed to have a standard deviation of 1.25 and a mean for the various periods as follows:

03-10 hours UT	5.33
11-18	5.33
19-02	6.00
00-24	5.67

The 8-hour and 24-hour indices Q_p are determined separately. Each index is a weighted mean where the CRPL observations have unit weight and the others are weighted by the correlation coefficient with the CRPL observations.

The table, analagous to that for Q_a , includes the 8-hourly quality figures; whole day quality figures; short-term forecasts issued by NPRWS three times daily at 02^h, 10^h, and 18^h UT, applicable to the stated 8-hour periods; advance forecasts issued twice weekly by NPRWS (CRPL-Jp report); and half-day averages of geomagnetic K indices from Sitka.

The chart compares the outcome of advance forecasts, on the same basis as the similar chart for the North Atlantic Radio Path.

Note: Beginning with November 1956 the short-term forecast formerly made at 0900 UT was changed to 1000 UT. The North Pacific quality figures used for evaluation are now 8-hourly rather than 9-hourly.

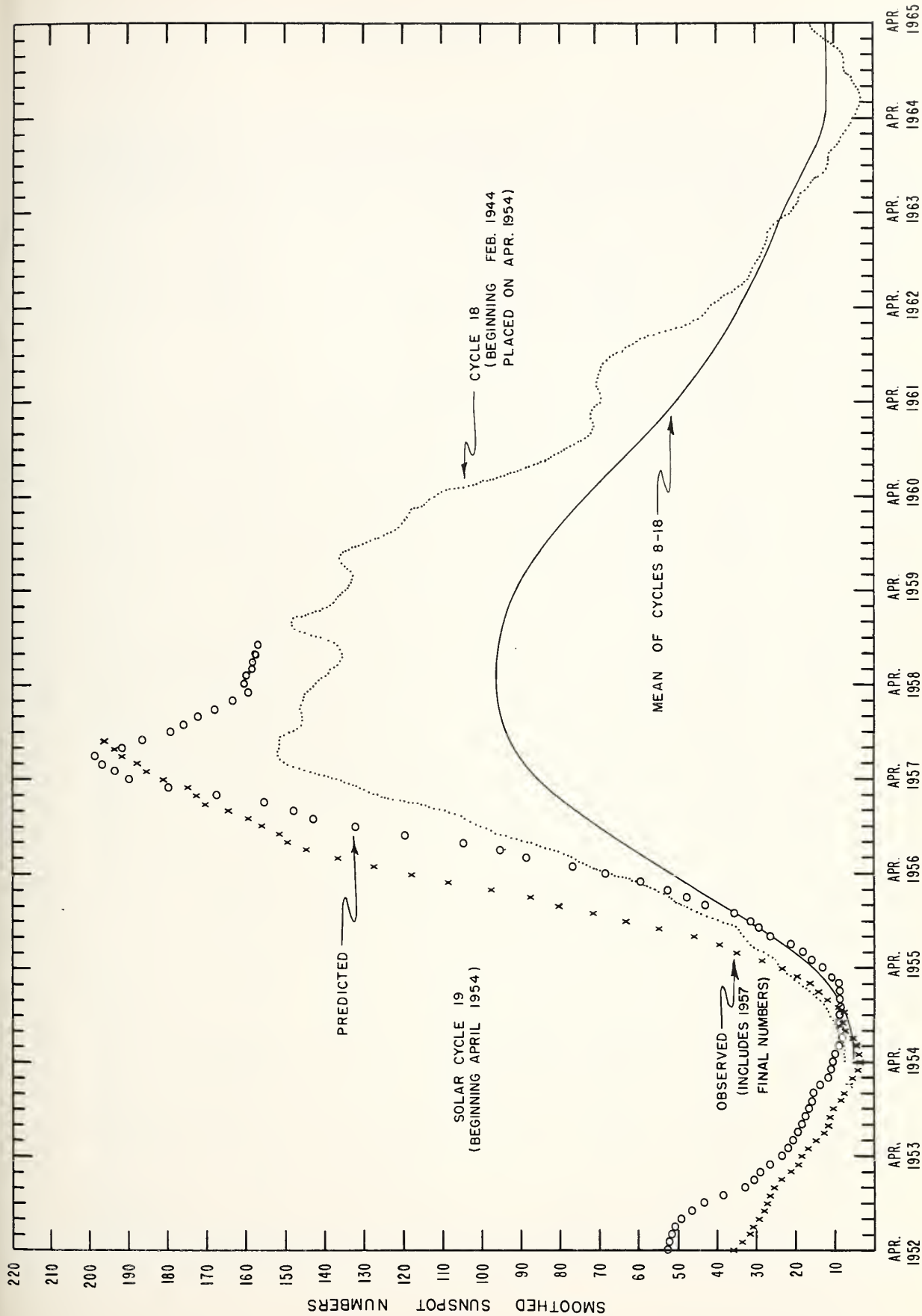
VII ALERT PERIODS AND SPECIAL WORLD INTERVALS

A table gives the Alert Periods and Special World Intervals (SWI) as designated by the IGY World Warning Agency at Ft. Belvoir, Va. For each day of the Alert or SWI are given the number of flares of importance two or greater reported promptly to the IGY World Warning Agency and the magnetic activity index A_{Be} observed at the IGY World Warning Agency.

DAILY SOLAR INDICES

Feb. 1958	American Relative Sunspot Numbers R_A'
1	154
2	143
3	158
4	159
5	176
6	119
7	160
8	131
9	155
10	117
11	160
12	143
13	128
14	130
15	143
16	162
17	145
18	121
19	103
20	156
21	159
22	171
23	129
24	156
25	163
26	139
27	108
28	85
Mean:	141.9

Mar. 1958	Zürich Provisional Relative Sunspot Numbers R_Z	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	109	195
2	90	209
3	140	223
4	185	232
5	203	233
6	215	251
7	220	256
8	187	251
9	177	255
10	181	242
11	168	235
12	156	232
13	145	238
14	158	227
15	165	217
16	155	214
17	164	208
18	162	210
19	155	220
20	154	232
21	156	224
22	163	266
23	187	268
24	204	274
25	180	258
26	194	284
27	226	302
28	292	295
29	302	332
30	338	344
31	342	338
Mean:	189.4	250.5



CALCIUM PLAGE AND SUNSPOT REGIONS

MARCH 1958

CMP Mar. 1958	Lat	McMath Plage Number	Return of Region	Calcium Plage Data			Sunspot Data		
				CMP Values Area Int.		History, Age	CMP Values Area Count		History
01.6	S12	4442	*	(5000)	(3)	$l \text{ --- } l$ 5	70	3	$b \text{ --- } l$
06.2	N24	4443	4399	1800	3	$l \text{ --- } l$ 2	660	20	$b \text{ --- } l$
07.3	N32	4444	New	2500	3	$l \text{ --- } l$ 1	820	16	$l \text{ --- } l$
07.7	S15	4445	4400	8000	2.5	$l \text{ --- } l$ 5	2210	24	$l \text{ --- } l$
08.8	N21	4446	4405	4000	2.5	$l \text{ --- } l$ 3	70	2	$l \text{ --- } l$
09.7	S23	4447	4400	1300	2	$l \text{ --- } l$ 5			
10.5	N25	4450	4411	1000	1.5	$l \text{ --- } l$ 3			
10.6	N10	4448	4412	1000	2	$l \text{ --- } l$ 2			
11.9	N14	4449	4410	8300	3	$l \text{ --- } l$ 3	1060	12	$l \text{ --- } l$
12.2	S12	**	New	600	2.5	$b \text{ --- } l$ 1			
12.5	N41	4454	New	200	2	$b \text{ --- } d$ 1			
13.4	N25	4452	4410	1000	2	$l \text{ --- } l$ 3	50	2	$b \text{ --- } d$
13.5	N14	4453	New	2300	3	$l \text{ --- } l$ 1	850	6	$l \text{ --- } l$
15.6	S26	4455	4414	500	1.5	$l \text{ --- } d$ 8			
16.7	N08	4462	New	300	1.5	$b \text{ --- } d$ 1			
17.6	N27	4468	+	400	1	$b \text{ --- } l$ 1			
17.7	S20	4457	4422	900	1.5	$l \text{ --- } l$ 5			
18.2	N13	4456	New	6200	3	$l \text{ --- } l$ 1	880	20	$l \text{ --- } l$
19.1	S04	4472	New	500	1	$b \text{ --- } l$ 1			
20.5	N36	4460	New	1500	3	$l \text{ --- } l$ 1	200	7	$l \text{ --- } l$
20.7	N20	4461	4424	400	1	$l \text{ --- } d$ 4	(10)	(1)	$l \text{ --- } d$
20.8	N08	4463	4430	400	1.5	$l \text{ --- } d$ 2			
21.0	S18	4459	++	2200	2.5	$l \text{ --- } l$ 3	140	1	$l \text{ --- } l$
22.3	S06	4466	New	300	1	$l \text{ --- } d$ 1			
22.4	S20	4473	4427	1100	1	$l \text{ --- } l$ 3			
22.6	N22	4465	New	4000	3	$l \text{ --- } l$ 1	1440	20	$l \text{ --- } l$
23.7	N11	4467	New	1200	2.5	$l \text{ --- } l$ 1	170	9	$l \text{ --- } l$
24.2	S18	4470	4428	2000	2	$l \text{ --- } l$ 4			
24.9	N26	4469	New	2200	3	$l \text{ --- } l$ 1	600	27	$l \text{ --- } l$
26.6	N18	4474	New	2300	3.5	$l \text{ --- } l$ 1	200	2	$l \text{ --- } l$
28.2	S24	4479	New	800	2	$b \text{ --- } l$ 1			
28.3	N20	4475	New	1600	3	$l \text{ --- } l$ 1	190	10	$l \text{ --- } d$
28.5	S12	4476	New	12,000	3.5	$l \text{ --- } l$ 1	2090	37	$l \text{ --- } l$
28.9	N31	4477	4435	500	2.5	$l \text{ --- } l$ 2			
29.1	N09	4482	New	700	2.5	$b \text{ --- } l$ 1	80	4	$b \text{ --- } d$
30.2	S22	4478	4438	2400	2.5	$l \text{ --- } l$ 2	1720	11	$l \text{ --- } l$
30.5	N06	4491	New	(200)	(1.5)	$b \text{ --- } d$ 1			

COMMERCE - STANDARDS - BOULDER

* 4393 and 4394.

** 4451 (4458).

+ In position of 4417.

++ 4431 and 4426.

CORONAL LINE EMISSION INDICES

MARCH 1958

CMP Mar. 1958	North East Quadrant (observed 7 days earlier)				South East Quadrant (observed 7 days earlier)				South West Quadrant (observed 7 days later)				North West Quadrant (observed 7 days later)			
	G6	G1	R6	R1	G6	G1	R6	R1	G6	G1	R6	R1	G6	G1	R6	R1
1	117	147	42	109	106	140	17	30	83	108	x	x	87	116	x	x
2	81	100	x	x	76	93	x	x	x	x	x	x	x	x	x	x
3	x	x	x	x	x	x	x	x	45	59	20	32	79	104	19	42
4	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
5	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
6	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
8	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
9	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
10	147	205	42	68	93	118	21	32	79	96	x	x	176	222	x	x
11	111	136	x	x	68	84	x	x	x	x	x	x	x	x	x	x
12	123	178	30	50	53	70	12	14	x	x	x	x	x	x	x	x
13	103	128	x	x	44	52	x	x	x	x	x	x	x	x	x	x
14	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
15	81	96	x	x	37	44	x	x	x	x	x	x	x	x	x	x
16	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
17	123	169	18	32	63	84	23	42	x	x	x	x	x	x	x	x
18	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
19	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
20	x	x	x	x	x	x	x	x	106a	139a	57a	150a	102a	108a	10a	12a
21	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
22	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
23	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
24	125	238	20	30	135	216	x	x	84	92	18	36	129	194	31	42
25	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
26	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
27	x	x	x	x	x	x	x	x	174	260	x	x	169	230	38	90
28	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
29	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
30	x	x	x	x	x	x	x	x	97	118	x	x	59	72	x	x
31	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

* = yellow line observed.
a = index computed from low weight data.
x = no observations.

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG.	PLACE REGION				TIME — UT	M.E.S. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX WIDTH H _s	
WENDEL SIMEIZ SCHAUINS ONOREJOV WENDEL ONOREJOV WENDEL ZURICH ZURICH AROSA	01 0911	0938		S09 W48	4436	27	36				34.00			S-SNF
	01 0912	1007		S10 W46	4436	55	3					4.10		S-SNF
	01 0916	0950		S12 W42	4436	34	4	3	0918					
	01 0918	0922		S13 W45	4436	4	16					3.00		
	01 0925	0938		S16 W80	4428	13	1	3	0929			3.00		
	01 0929	0933		S17 E78	4445	4	16					2.00		
	01 1007	1036		S19 W80	4428	29	1	2	1346			1.00		
	01 1346	E 1348		S16 E77	4445	2	1	2	1408					
	01 1408	1412		N15 W31	4434	4	1	2						
	01 1527	1539		S12 W56	4436	12	1							
UCCLE	02 0820	E 0838	0	N32 W22	4435	18	0	1	0820	3.40				
CAPRI S	03 1008	E 1042	0	S14 E59	4445	34	0	26	2 1026	5.00	10.00			
NIZAMIAH	03 1013	E 1048		S19 E60	4445	35	0	2	2 1018	9.72	18.93	3.60		
ARCETRI	03 1015	E 1100		S12 E58	4445	45	0	2	1					
R O HERST	03 1016	E 1115	1022	S17 E62	4445	59	0	36	3 1021	7.10	14.80	6.70	250	
STOCKHOLM	03 1031	E 1036	0	S17 E63	4445	5	0	2						
KODAIKUN	03 1040	E 1407	0	S15 E54	4445	121	0	16	1 1040	2.00	4.40	2.00		
CAPRI S	03 1206	E 1411		S18 E65	4445	131	0	1	1 1209	1.47	3.11		72	
USNRL	03 1229	E 1832	D	S20 E61	4445	20	0	1	1 1231	2.50				
CLIMAX	03 1812	E 1832	D	S21 E70	4445	16	1	2	2 2346	1.90	2.40			
HAWAII	03 2340	2356		S14 E40	4445	50	1	2	2 1322	1.13	1.59	1.00	106	
USNRL	04 1320	1410		S25 W45	4445	26	0	1	1 1725	2.60	3.30			
USNRL	04 1724	E 1750		S17 E40	4445	17	0	1	1 1725					
HUANCAYO	04 2208	2225	D	S17 E33	4445	17	0	1	2					
ZURICH	05 0908	E 0923		S17 E29	4445	15	0	16	3 908		4.00			
ONOREJOV	05 0956	E 1018		S22 E28	4445	22	0	1	3 1007			2.30		
ZURICH	05 1001	E 1018		S19 E25	4445	17	1	1	3 1001		3.00			
WENDEL	05 1004	E 1135		S21 E27	4445	91	0	1			4.00			
ONOREJOV	05 1021	1037	1022	S22 E30	4445	16	1	1	3 1022			2.50		
AROSA	05 1024	1035		S21 E28	4445	11	1							
WENDEL	05 1307	E 1333	0	S18 E29	4445	26	0	16			6.00			
ZURICH	05 1313	1335		S19 E28	4445	22	1	3	3 1313		4.00			
AROSA	05 1315	E 1330		S17 E26	4445	15	0	16				2.20		
ONOREJOV	05 1322	E 1342	0	S18 E28	4445	20	0	16	1 1327	1.92	3.19	1.00	71	
USNRL	05 1413	E 2019	0	S10 W54	4442	56	0	1	1 1414	2.94	3.40			
USNRL	05 1635	E 1721		S20 E28	4445	46	1	1	1 1642	4.52	11.03			
GOTTAWA	05 1647	E 1710	1656	N24 W58	4435	33	0	2	2 1656	1.70	5.45		102	
USNRL	05 1649	E 1720		N24 W55	4435	21	0	2	1 1649	2.50	2.94	1.00	63	
USNRL	05 1702	E 1858		N24 E06	4443	116	1	1	1 1703					
MT WILSON	05 1720	1728		S14 E30	4445	8	1	1			1.03		108	
USNRL	05 1721	1730		S15 E28	4445	9	1	1	1 1723	3.36	3.86			
GOTTAWA	05 1721	1740		S13 E29	4445	19	1	1	1 1724	3.60			18	
SAC PEAK	05 1820	1842		S15 E29	4445	12	1	3	1 1902	2.60	4.54	1.00	70	
USNRL	05 1902	2100	0	S08 W57	4442	118	0	1	1 2051	1.13	1.22		107	
USNRL	05 2047	2100	0	S19 E23	4445	13	0	2	2 2328	4.90				
CLIMAX	05 2311	E 2341	2328	S09 E15	4445	30	0	1						
ARCETRI	06 0820	E 0844	0	S20 W63	4441	24	0	1	3 0820	1.30	2.80			
ARCETRI	06 0846	E 0911		S17 E19	4445			3	3 0846	2.50	2.70			
UCCLE	06 0931	E		N24 W05	4443		16					PAGE	1	

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE MAY 1958	OBSERVED UNIVERSAL TIME		LOCATION			DUR. — MINUTES	IM- FOR- TRACE	OBS. COND.	TIME — UT	MEASUREMENTS		PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG.	REGION					MEAS. AREA Sq. Deg.	CONJ. AREA Sq. Deg.	
CAPRI S	06 1246 E	1330 D		S14 W61		4442	44 0	1	3	1246	1.00	22.0	
AROSA	06 1511	1519		S20 E12		4445	8	1					
AROSA	06 1538	1547		S20 E12		4445	9	1					
CLIMAX	06 2018	2030 0		S22 E13		4445	12 0	1	1	2023	5.00		78
USNRL	06 2050	2107 0		S08 W71		4442	17 D	1		2050	1.02	2.78	
MITAKA	07 0525 E	0537 D		N22 E23		4446	12 0	16	1	0530	5.67	7.06	149
UCCLE	07 0828	0900	0829	N11 E85		4449	32	16	2	0829	2.00	4.00	
UCCLE	07 1024	1156		N11 E86		4449	86	2	2	1024	1.50	3.40	
CAPRI S	07 1030	1156		N14 E72		4449	40 0	2	2	1054	2.00	6.80	
R O HERST	07 1043 E	1050 0	1043 E	N10 E72		4449	7 0	1	1	1043	.60	2.40	
STOCKHOLM	07 1100 E	1140 0		N10 E70		4449	40 0	2	1				
NEGERHORST	07 1105 E	1200		N10 E72		4449	55 0	2	1				
MEUDON	07 1110 E			N12 E68		4449		1					
UCCLE	07 1203 E	1212 D		N11 E86		4449	9 D	3	2	1115	6.00	13.00	
ONORE JOV	07 1239 E	1319		N08 E69		4449	40 D	16	2	1208	1.99	5.71	65
USNRL	07 1325 E	1307		N06 E70		4449	32 0	16	1	1242	3.56	3.64	116
USNRL	07 1326	1336		S18 E01		4445	43	1	3	1246	1.57	1.61	117
USNRL	07 1453	1536		S18 W01		4445	43	1	3	1330	1.24	3.40	68
USNRL	07 1815	1845		N08 E85		4449	30 0	1	3	1455	1.81	1.83	
USNRL	07 1847 E	2024		S18 W03		4445	37 0	1	1	1815			
HUANCAYO	07 2033	2110 0	2033	S15 W80		4442	37 0	1	1				
HUANCAYO	07 2033	2110 0	2033	S15 W80		4442	37 0	1	1				
MITAKA	08 0530 E	0542		N25 W22		4443	12 0	1	1	0534	1.84	2.26	96
MITAKA	08 0557 E	0631 0		N12 E56		4449	25 0	1	1	0602	1.84	3.92	120
ATHENS	08 0851	0935		S21 W31		4445	42 0	16	4		3.30	2.60	
ATHENS	08 0914	0922		S11 W20		4442	7	2	4		.40	5.40	
AROSA	08 1051	1059		N32 W08		4445	8	1					
AROSA	08 1051	1059		S18 W14		4445	8	1					
SAC PEAK	08 1720	1755	1727	N36 W19		4444	35	2	2	6.60			30
MCWATH	08 1740 E	2215 D		N33 W17		4444	17 D	1	1	2208	1.60	3.00	
HAWAII	08 2158	2249		N12 E52		4449	50	1	1	2209	2.20		
CLIMAX	08 2200	2217	2202	N05 E54		4449	17 0	1	2	2340	2.50		20
SAC PEAK	08 2336	2348 0	2340	N32 W20		4444	12 0	1	1	2346	2.70		
CLIMAX	08 2336	2352 D	2344	N17 E57		4449	16 0	1	1	2346	2.70		
HAWAII	08 2337 E	2356 0	2337	N12 E52		4449	21 0	26	1	2337	7.57	16.20	
MITAKA	09 0210 E	0221		N09 E48		4449							
MITAKA	09 0443 E	0514		N24 W35		4443	11 0	16	1	0216	7.57	11.20	122
MITAKA	09 0452 E	0505 0		N32 W23		4444	31 0	1	1	0246	1.84	2.11	113
MITAKA	09 0452 E	0505 0		S15 W19		4445	13 0	1	1	0453	1.84	2.47	100
WENDEL	09 0757 E	0808 D		N10 E42		4449	7 0	16	1	0621	3.71	5.68	115
UCCLE	09 0900	0927	0920	N19 E45		4449	27 0	16	2	0920	3.40	6.00	
UCCLE	09 0902	0937	0922	N32 W58		4449	55	1	2	0922	2.20	3.00	
UCCLE	09 0933	0946	0936	N12 E50		4453	13 0	16	1	0938	3.40	5.40	
UCCLE	09 0946	1032	0956	N14 E20		4453	42	2	4	0956	4.50	5.40	
UCCLE	09 0955	1025	1004	N34 W34		4444	30	1	4	1004	2.20	2.40	
UCCLE	09 1031	1038	1033	N12 E50		4449	5 0	16	3	1033	3.40	5.10	
ONORE JOV	09 1056	1104	1059	N09 E44		4449	7 0	16	2	1059	4.00	4.40	
ONORE JOV	09 1057 E	1104	1059	N12 E45		4449	7 0	16	3	1059			
ONORE JOV	09 1120 E	1135	1122	N11 E40		4449	15 0	16	3	1122			
ONORE JOV	09 1120 E	1135	1122	N12 E51		4453							

CONVICTE - STANDARD - BOUTLER

SOLAR FLARES
MARCH 1958

OBSERVATORY	DATE MAR. 1958	OBSERVED TIME		LOCATION		DURA- TION MINUTES	DE- FOR- TANCE	OBS. COND.	TIME — U T	MEASUREMENTS		MAX. WIDTH Re	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	AFFIX.	M-MATR. LAT. LONG. REGION					N.C.S. AREA Sq. Deg.	COIL. AREA Sq. Deg.			
ONDREJOV	09	1145 E	1154 O		N13 E49 4453	9 D	1	3	1345	1.58	2.76	2.40	80	S-SMF
USNRL	09	1217 E	1341		N15 E55 4453	84 D	1	2	1341	2.30			16	
SAC PEAK	09	1447	1507		S21 W35 4445	20	1	2		1.91	2.37		25	
OTTAWA	09	1454	1500		S19 W35 4445	6	1	1	1455	6.80				
SAC PEAK	09	1540	1740 U		N34 W32 4444	120 D	2	2		6.38	10.00			S-SMF
OTTAWA	09	1542	1709		N32 W32 4444	87 D	2	2	1648	2.71	4.33	1.00	145	S-SMF
USNRL	09	1543	1642 D		N35 W30 4444	59 D	16	2	1645	2.50			18	S-SMF
SAC PEAK	09	1957	2030		N11 E37 4449	33	1	2		1.84	2.98	2.45	134	
MITAKA	10	0007 E	0031		N32 W38 4444	24 D	1	2	0013	5.67	6.73	1.91	87	
MITAKA	10	0111 E	0131		N23 W33 4446	20 D	1	1	0113	1.84	1.44	1.81	100	
MITAKA	10	0134 E	0140 O		N32 W39 4444	6 D	1	1	0134	1.84	2.87	1.99	128	
MITAKA	10	0148 E	0155		N33 W33 4444	7 D	1	1	0154	3.90	4.40	2.22	149	G-SMF
RODAIKNL	10	0208	0241 O		N12 E38 4453	33 D	16	1	0212	1.80	2.60	2.00	154	Slow S-SMF G-SMF
ATHENS	10	0210 E	0217 D		N11 E35 4453	7 D	1	3	0213	1.39	2.45	4.50		S-SMF G-SMF
CAPRI S	10	0709 E	0743		N34 W36 4444	34 D	16	1	1316	1.16	2.12			
NEDERHORST	10	1316 E	1350 O		N08 E24 4449	34 D	1	1	1411	3.30				
OTTAWA	10	1335	1345		N37 W35 4444	10	2	1	1411	3.30				
ONDREJOV	10	1408	1420 D		N31 W41 4444	9 D	16	1	1412	4.30				
OTTAWA	10	1710	1718		N32 W42 4444	8	1	3	1714	2.10				
CLIMAX	10	1955	2006		N34 W46 4444	11	1	2	2001	4.30				
HAWAII	10	2024	2128		S11 W50 4445	54 D	2	2	2052	3.06				
USNRL	10	2026	2032		S13 W50 4445	26 D	16	2	2050	3.30				
SAC PEAK	10	2028	2128 D		S12 W48 4445	6 D	1	2						
	10	2040 E	2041 O		S10 W50 4445	1 D	1	2						
HAWAII	11	0030 E	0042 D		N11 E02 4449	12 D	1	1	0034	3.30				G-SMF
UCCLE	11	0837			N29 W85 4443		2	3	0833	4.00				
UCCLE	11	0902	0906		N56 W55 4442	4	1	3	0902	1.50				
ONDREJOV	11	0918	0927 D		N10 E20 4453	9	1	2	0923	2.00		2.60		
MITAKA	11	2352 E	2400		N09 E18 4453	11 D	1	2	2358	2.78	5.93	1.35		
MITAKA	12	0024	0233		S19 W62 4445	8 D	16	2						
MITAKA	12	0027 E	0032 D		N08 E02 4449	129	26	2	0044	7.63	7.95	2.29	227	G-SMF
MITAKA	12	0043 E	0128 D		N10 W04 4449	5	0	1	0029	.89	.93		115	
UCCLE	12	0914	0930		N10 W04 4449	45 D	1	2	0044	4.70	4.89	1.90	120	
UCCLE	12	0943 E	0947		N14 E18 4453	16 D	16	4	0916	4.00				
UCCLE	12	0943 E	0959		N15 E70 4456	4 D	16	4	0944	3.40	4.70			
UCCLE	12	1110	1122		N12 E15 4453	16 D	2	4	0945	5.60				
UCCLE	12	1127	1159		N15 E03 4449	12 D	1	4	1113	2.20				
UCCLE	12	1128	1200		N15 E70 4456	32 D	16	4	1131	3.40	5.10			
UCCLE	12	1132	1137		N32 W80 4444	32 D	16	4	1158	5.60	8.90			
UCCLE	12	1138	1200 D		N23 W50 4446	25 D	2	4	1137	4.50	5.60			
UCCLE	12	1436 E	1531		S20 W69 4445	55 D	26	2	1441	2.04	5.50	2.00	162	Slow S-SMF
MITAKA	12	1440 E			S15 W65 4445		2	2						
MITAKA	13	0018 E	0034 O		N10 E78 4455	16 D	1	1	0034	.89	1.22	3.23		Slow S-SMF
ONDREJOV	13	1053 E	1058		N00 E90 4461	12 O	1	1	1055	1.00		2.40		
HAWAII	13	2216	2300		N19 W01 4453	44	1	1	2220	4.00	4.50			
MITAKA	14	0246 E	0320		N10 W08 4453	34 D	1	1	0251	2.78	2.89	2.10	107	

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED			LOCATION			DUR- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL LONG-TERM EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	APPROX. LONG.	APPROX. REGION				TIME — UT	AREA Sq. Deg.	COORD. Bg. Deg.	
NIZAMIAH	14	0442	0458	0446	N09 W11	4453	16	1	3	0502	3.04	3.22	1.60	Slow S-SNF
MITAKA	14	0456 E	0512	0500	N11 W12	4453	16	0	1	0502	11.40	11.80	1.84	
AROSA	14	0846	0910		N08 W18	4449	24	1	1					
AROSA	14	0920	0941		N08 W19	4449	21	2	1					
ZURICH	14	0948 E	1100	0	N11 W13	4453	72	2	1	948		7.00		
UCCLE	14	1000 E	1029	1018	N10 W25	4449	29	1	4	1018				
AROSA	14	1013	1036		N06 W26	4449	23	1	1					
UCCLE	14	1013	1100	1021	N10 W15	4453	47	16	3	1021				
AROSA	14	1023	1043		N08 W20	4449	20	1	1					
UCCLE	14	1136	1200	1143	N10 W15	4453	24	1	3	1143				
ZURICH	14	1301 E	1325	D	N11 W15	4453	24	0	2	1320				Slow S-SNF
R O HERST	14	1504 E	1530	1507	N11 W90	4446	26	0	2	1507	450	6.00		
ONOREJOV	14	1518 E	1541	0	S23 W80	4445	23	0	1	1518			2.20	
UCCLE	15	0822	0850	0831	N12 W25	4453	28	16	4	0831				
UCCLE	15	0834	0841	0835	N37 E58	4460	7	1	4	0835	4.00	4.40		
ZURICH	15	1010 E	1028		N10 W25	4453	18	0	2	1010	1.00	2.00		
UCCLE	15	1030	1033	1030	N12 W25	4453	3	1	4	1030	2.00	2.00		
UCCLE	15	1208	1235	1219	N36 E65	4460	27	1	2					
UCCLE	15	1342	1347	1344	N13 W27	4453	5	1	4	1344	3.50	3.70		
ZURICH	15	1345	1346		N10 W25	4453	1	1	2	1345	1.00	1.00		
ONOREJOV	15	1541 E	1547		N11 W27	4453	6	0	2	1541				Slow S-SNF
UCCLE	15	1542 E	1547	1542	N13 W27	4453	5	1	2	1542	2.00	2.30		
UCCLE	16	0839	0850	0841	N13 W41	4453	11	2	4	0841	4.50	6.30		
UCCLE	16	0840	0848	0842	N14 E32	4456	8	16	4	0842	3.60	4.50		
ZURICH	16	0840 E	0905		N17 E56	4461	25	0	2	840	2.00	2.00		
UCCLE	16	0851	0930	0918	N15 E30	4456	39	16	4	0918	4.50	5.60		
ZURICH	16	0857	0902		N13 E29	4456	5	1	2	857				
AROSA	16	0950	0955		N27 W90	4446	5	1	1					
AROSA	16	1358	1412		N12 E25	4456	14	1	1					
NIZAMIAH	17	0438	0453	0444	N10 E18	4456	15	16	3	0444	4.86	5.34		Slow S-SNF
ZURICH	17	0804 E	0817		N15 W71	4449	13	0	2	804			2.00	
ZURICH	17	0804 E	0909	0	N20 E71	4465	65	0	2	804			6.00	
UCCLE	17	0819 E	0825		N25 E85	4465	6	0	3					
R O HERST	17	0938 E	0948	0	N23 E70	4465	10	0	1	0938	4.60	2.10		
WENDEL	17	1006 E	1116	0	N23 E77	4465	70	0	1				3.00	
WENDEL	17	1008	1034		N10 E15	4456	46	16	1				7.00	
AROSA	17	1008	1120		N10 E16	4456	72	2	4	1025				
UCCLE	17	1011	1144	1025	N11 E15	4456	33	16	3	1030	6.00	6.00		
NIZAMIAH	17	1027 E	1043	1030	N10 E18	4456	16	1	1				1.80	
WENDEL	17	1135	1320		N23 E77	4465	27	0	1					Slow S-SNF
WENDEL	17	1215	1338		N33 E72	4460	23	0	1					
WENDEL	17	1215	1338	0	N23 E73	4463	22	0	1	1515	1.50	3.00		
UCCLE	17	1315 E	1535	1515	N22 E68	4462	20	1	3	1517	4.64	3.00		
UCCLE	17	1315 E	1535	1515	N22 E68	4462	43	1	2	1518	1.51	1.81		
OTTAWA	17	1516	1559	1518	N23 E70	4462	43	1	1	1518	1.02	1.09		
USNRL	17	1516 E	1550		N13 E10	4456	34	0	1					
UCCLE	18	0804	1125	0835	N22 E60	4465	20	1	4	0835	6.80	4.20		
UCCLE	18	0805	0824	0	N18 E35	4465	19	0	4	0810	3.40			
UCCLE	18	0810	0834	0825	N09 W70	4453	24	1	4	0825	2.80			
UCCLE	18	0922	0930	0927	N13 W80	4453	8	1	4	0927	2.20			

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED		LOCATION		IM- TAN — MINUTES	IM- POT- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG.				TIME — UT	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	
UCCLLE	18	1145	1201 D	N22 E60	4465	16 D	16	4	1155	3.40		G-SNF
HUANCAYD	18	1905 E	1955 D	N22 E53	4465	50 D	16	2				
MITAKA	19	0300 E	0332 D	N23 E48	4465	32 D	16	1	0321	13.40	25.90	120
ATHENS	19	0730 E	0750 D	N24 E48	4465	20 D	1	3		.60	2.40	
UCCLLE	19	0956 E		N24 E48	4465		1	1				
UCCLLE	19	0956 E		N24 E48	4465		1	1				
MEUDON	19	1022	1140	N14 W13	4456	78	1	1			4.00	
UCCLLE	19	1027 E	1032 D	N12 W13	4456	5 D	1	1	1028	2.10	2.10	
CAPRI S	19	1045 E	1125 D	N11 W11	4456	40 D	1	2	1050	2.40	2.50	
ARDSA	19	1114 E	1120	N24 E39	4465	6 D	1	1				
UCCLLE	19	1114 E	1140	N12 W15	4456	26 D	2	1				
UCCLLE	19	1117 E	1135 D	N12 W11	4456	18 D	16	1	1125	4.50	4.50	
MT WILSON	19	1910	1931	N14 W18	4456	21	1	1				
MT WILSON	19	2137	2152	N22 E40	4465	15	1					
ONDRE JUV	20	0656 E	0706	N24 E56	4469	10 D	1	2	0700	7.90		S-SNF
UCCLLE	20	0723	0802	N22 E35	4469	59	2	4	0752	5.10	5.40	
UCCLLE	20	0728	0851	N21 E32	4465	3	2	3	0759	5.80	5.40	
UCCLLE	20	0728	0737	N21 E32	4469	152	1	4	0726	3.20	3.40	
UCCLLE	20	0825	0848	N18 W58	4456	11	16	3	0730	5.80		
UCCLLE	20	0828	0838	N22 E58	4453	32	2	4	0828	5.60		
UCCLLE	20	0828	0920	N20 E32	4465	32	1	4	0838	2.20		
UCCLLE	20	0905	0955	N20 E32	4465	50	1	4	0855	6.20		
UCCLLE	20	0907	0957	N23 E55	4465	50	1	4	0920			
UCCLLE	20	0959	1030	N23 E43	4469	31	16	2				
UCCLLE	20	1127 E	1144 D	N23 E35	4465	17	2	2				
MEUDON	20	1259	1330	N25 E28	4465	31	2					
NEDEHORST	20	1305 E	1320	N23 E29	4465	15	2					
MEUDON	20	1314	1344	N18 W30	4452	30	1					
UCCLLE	20	1324 E	1356	N23 E35	4465	32 D	16	3		4.50		
UCCLLE	20	1324 E	1356	N20 W32	4456	32 D	1	2		4.10		24
SAC PEAK	20	1445	1545	N22 E26	4445	60	16	2				
SAC PEAK	20	1452	1550	N25 E28	4465	58	16	2				
UCCLLE	20	1455 E	1552 D	N24 E29	4465	42 D	2	1	1517	5.00	6.70	S-SNF
UCCLLE	20	1510 E	1538 D	N23 E29	4465	3 D	16	2		4.50		
UCCLLE	20	1535 E	1930	N23 E33	4465	65	1	2		2.70		15
SAC PEAK	20	1825	2130	N23 E25	4465	65	2	2		3.80		24
SAC PEAK	20	2025	2130	N22 E23	4465	65	2	2				
SAC PEAK	20	2230	2315 D	N22 E22	4465	45 D	1	2				16
UCCLLE	21	1019	1050	N17 E21	4465	31	2	2	1022	5.50	5.50	
KODAIKUN	21	1021 E	1040 D	N20 E20	4465	19 D	16	2	1030	3.90	4.00	S-SNF
R D EDIN	21	1027 E	1044	N22 E17	4465	17 D	2	1	1031	6.00	7.20	
NIZANIAH	21	1040 E		N E	4465		1	1			1.80	
CAPRI S	21	1613	1432 D	N23 E14	4465	19 D	1	1	1415	2.00	2.20	S-SNF
SAC PEAK	21	1850	1937 D	N22 E12	4465	47 D	16	3	1902	4.10	4.80	Slow S-SNF
HAWAII	21	1852	1920	N23 E07	4465	28	16	3				
UCCLLE	21	1900 E	1925	N22 E12	4465	25 D	2					
UCCLLE	22	0925 E	1129	N18 W60	4456	124 D	1	2	0944	2.20	2.60	G-SNF
UCCLLE	22	1123 E	1155	N22 E05	4465	32 D	16	2	1130	4.50		
MEUDON	22	1125	1150	N20 E07	4465	25	1					

PAGE 5

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION MINUTES	DE- FOR- TANCE	OBS. COND.	MEASUREMENTS				PROVINCIAL LONGITUDINE EFFECT		
		START	END	LAT	APPROX. MER. DIST.				PLAGE REGION	TIME UT	MEAS. AREA Sq. Deg.	CORR. Sq. Deg.		MAX. WIDTH In.	MAX. INT. %
MEUDON	22 1147	1201		S20 E90	4478	14	1								
	22 1210	1230		S12 E90	4476	20	1								
	23 0844	0857		N13 W68	4456	13	1								
	23 0950	1200	1005	S15 E90	4476	130	0	4	1005	29.00	3.00				
	23 0950	1211		S14 E75	4476	141	36				64.00				
	23 0951	1208	0	S14 E76	4476	248	0	3			25.00				
	23 0957	1137	0	S23 E67	4476	71	0								
	23 0957	1137	0	S13 E78	4476	100	0	2							
	23 1005	1055		S12 E76	4476	50	3								
	23 1009	1119		S09 E80	4476	70	3								
NIZAMIAH	23 1012	1200	0	S12 E85	4476	108	2	4	1018	5.47	10.61	3.60			
	23 1016	1027	D	S18 E60	4476	11	D	1							
	23 1056	1329		S16 E73	4476	153	16								
	23 1105	E	1200	S14 E83	4476	55	D	2							
	23 1215	E	1319	S14 E73	4476	64	0	26	1	1215	10.00				
	23 1216	E	1227	S13 E75	4476	11	0	2	1218	2.04	6.51	2.00	85		
	23 1227	1252		N23 W12	4465	25	1	1	1227		2.00				
	23 1258	E	1415	S20 E88	4478	77	D	2							
	23 1258	E	1415	S12 E90	4476	77	D	2							
	23 1826		1838	N12 W65	4456	12	1	2	1828	1.50	3.10				
HAWAII	24 0048	0052	D	N23 W01	4469	4	D	1							
	24 0655	E	0703	N17 W26	4465	8	D	1							
	24 0713	0721		N17 W26	4465	13	1								
	24 0717	0731		N20 W26	4465	19	1	4	0720	2.20	3.10				
	24 0731	0740	0720	S17 E72	4476	11	16	4	0734	2.20					
	24 0745	0756	0746	S17 E72	4476	35	1	4	0744	3.40	4.80				
	24 0748	0823	0759	N21 W27	4465	38	1	4	0759	3.40					
	24 0749	0827		N20 W25	4465	27	D	16	2	758	3.00				
	24 0758	E	0825	S22 E88	4478	7	2	4	0758	3.40	6.80				
	24 0758	E	0834	S16 E65	4476	36	0	2	758	4.00					
AROSA	24 0800	E	0817	S17 W27	4465	17	0	4							
	24 0810	E	0831	S17 E66	4476	21	1	4	0822	2.20	3.00				
	24 0811	0830		S17 E72	4476	15	1								
	24 0813	0828		S16 E66	4476	15	1								
	24 0917	0925		S17 E72	4476	8	1	4							
	24 0953	1020		S16 E64	4476	27	1	4							
	24 0954	E	1014	S17 E64	4476	20	D	2	953						
	24 0955	1007		S17 E72	4476	12	1	4							
	24 1045	1056		S22 E88	4478	11	2	4	1047	2.20	3.00				
	24 1051	E	1055	S21 E81	4478	4	D	2	1052	3.40	6.80				
OMOREJOV	24 1110	E	1119	S16 E57	4476	9	D	1							
	24 1110	E	1124	S16 E55	4476	14	D	1							
	24 1110	E	1140	S15 E57	4476	30	D	1							
	24 1111	1122		S15 E61	4476	11	16	4	1117	3.40	4.30				
	24 1138	1200		N20 W30	4465	18	1	4	1145	2.20					
	24 1139	1157		N19 W27	4465	18	1								
	24 1238	1242	0	N17 W29	4465	4	0	4							
	24 1311	E	1338	N19 W28	4465	27	0	1							
	24 1313	1322		N17 W30	4465	9	1	4							
	24 1355	1404		S22 E80	4478	9	1	4	1400	1.20	2.40				
MEUDON	24 1607	E	1632	0		25	0	1							
				S17 E60	4476						4.00	PAGE	6		

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION	SUB- TION — MINUTES	RM. FOR TRACE	ONE COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	LAT. APPROX.	MONTH PLACE REGION			TIME U T	MEAS. AREA Sq. Deg.	CON- TEXT Sq. Deg.	MAX WIDTH H _o	SCALE INT. %
MT WILSON	23 1958	1614 E	1643	S13 E56	4476	1	4	1638	3.40	4.10		15
UCCLE	24 1655	1734 E	1737	N20 W32	4476	3 D	2	2016	1.80	3.30		
SAC PEAK	24 1734 E	2028	2016	S14 E58	4476	16	1	2210	3.30	4.00		
HAWAII	24 2208	2224	2210	N25 W16	4465	16	2	2320	3.10	5.90		
HAWAII	24 2306	0006	0006	S18 E60	4476	60	2					
NIZANIAH	25 0347	0354	0349	S13 E51	4476	7	2	0349	1.52	2.38	1.60	
NIZANIAH	25 0529 E	0555	0530	N18 E22	4474	26	0	0530	7.25	8.74	2.30	
KODAIKUN	25 0538 E	0547 D		N15 E25	4476	9	0	0538	5.50	6.60	2.00	154
NIZANIAH	25 0557 E	0626	0603	S13 E51	4476	29	0	0603	4.86	7.62	2.50	
ONDREJOV	25 0605 E	0622		S18 E50	4476	17	2	0605			2.60	
ONDREJOV	25 0623	0828		N20 W40	4465	5	3	0825			2.20	
WENDEL	25 0823	0841		N18 W37	4465	18	1			3.00		
ZURICH	25 0830 E	0841		N20 W41	4465	11	0	830		1.00		
AROSA	25 0835 E	0844		N17 W39	4465	9	0	0850			2.60	
ONDREJOV	25 0848	0851		S24 E60	4478	3	1					
AROSA	25 0848	0853		S25 E60	4478	5	1					
ZURICH	25 0859	0905		S25 E63	4478	6	1	859		1.00		
AROSA	25 0905	0912		S12 E52	4476	7	1					
ROME	25 1032	1045		S15 E43	4476	13	1					
UCCLE	25 1048	1101		N40 W90	4460	13	1					
WENDEL	25 1056 E	1118		S09 E49	4476	22	0			3.00		
ONDREJOV	25 1056 E	1122		N23 W09	4469	26	0			3.00		
ONDREJOV	25 1124 E	1127		S18 E63	4478	3	0	1125			2.20	
WENDEL	25 1151	1252		N37 W68	4460	62	1			7.00		
UCCLE	25 1202	1214	0	N35 W85	4460	12	0					
WENDEL	25 1411	1435	0	N19 W42	4465	24	0			5.00		
UCCLE	25 1414	1428		N21 W44	4465	14	1	1415	2.00	2.66		
OTTAWA	25 1418 E		1415	N19 W42	4465	12	0	1418	1.80		2.20	
ONDREJOV	25 1418 E	1430		N19 W42	4465	12	0	1420				
WENDEL	25 1449	1556		S15 E49	4476	67	1			6.00		
OTTAWA	25 1454	1605		S14 E46	4476	71	1	1503	1.91	2.78		
ONDREJOV	25 1457 E	1538		S15 E47	4476	42	0	1458			2.40	
NEDERHORST	25 1502 E	1600		S13 E46	4476	58	0					
CAPRI S	25 1509 E	1522	0	S14 E47	4476	13	0			3.20		
UCCLE	25 1513 E	1533	0	S15 E50	4476	20	2	1510	1.80	7.00		
SAC PEAK	25 1519 E	1605	U	S15 E47	4476	46	0	1520	5.00			
ROME	25 1708	1725		S15 E44	4476	17	1		2.20			
SAC PEAK	25 1715 E			S17 E47	4476	17	1		3.30			
ROME	25 1818	1830		N37 W75	4460	12	1					
HAWAII	26 0036 E	0040 D	0036	N21 W50	4465	4	0	0036	2.10	3.90		
AROSA	26 0750 E	0755 D		N22 E12	4474	5	0					
MT WILSON	26 1652	1712		N18 E00	4474	20	1					
MT WILSON	26 1742	1755		S19 E32	4476	13	1					
MT WILSON	26 1754	1805		S08 E06	4476	11	1					
MT WILSON	26 1815	1827		N10 W48	4467	12	1					
OTTAWA	26 1930			S29 W01	4476	20	1	1945	1.80	1.96		
OTTAWA	26 2046	2106		S05 E31	4476	20	1	2049	2.26	2.66		
OTTAWA	26 2142			S17 E28	4476	43	0	2155	1.80	2.08		
SAC PEAK	26 2347	2410 D		S18 E29	4476	50	2	2340	10.20	6.20		
HAWAII	26 2350	0020		S18 E28	4476	50	2					
NIZANIAH	27 0537 E	0549	0542	N24 W56	4465	12	0	0542	1.22	2.79	1.70	7

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED TIME		MAX. PHASE	LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT	
		START	END		APPROX. LAT. — MER. DIST.	MCARTH. FLARE REGION				TIME — U T	MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.	MAX. WIDTH He	MAX. INT. %
ZURICH	27 0823	0850			S19 E25	4476	27	1	2	823		2.00		
AROSA	27 0835	0843			N22 W67	4465	8 D	1						
ZURICH	27 0835	0846			N23 W54	4465	11	1	2	835		4.20		
WENDEL	27 0905	0917		0908	S24 E43	4478	12	1				4.00		
WENDEL	27 0907	0920 D			S30 E34	4478	13 D	1				3.00		
WENDEL	27 1016	1026			N22 W65	4465	10 D	1				4.00		
UCCLE	27 1029	1040		1033	N16 W09	4474	11 D	1	4	1033	1.50	3.00		
WENDEL	27 1030	1044			N15 W07	4474	14	1					2.10	
ONDREJOV	27 1031	1035			N24 W41	4469	4	1	3	1032			2.10	
ONDREJOV	27 1037	1047			N15 W09	4474	10	1	3	1040				
WENDEL	27 1042	1116			N22 W69	4465	34	26				14.00		
AROSA	27 1045	1108			N22 W69	4465	23	1				6.40		
UCCLE	27 1045	1113			N25 W80	4465	28	2	4					
ONDREJOV	27 1046	1107		1054	N22 W62	4465	21 D	16	3	1054		3.30		
UCCLE	27 1104	1109			N22 W72	4465	5 D	16	3			4.40		
WENDEL	27 1110	1115			S14 E80	4480	5	1	3	1112		4.00		
WENDEL	27 1159	1212			S23 W56	4470	13	1						
NEDERHORST	27 1201	1210			N23 W57	4465	9 D	1						
ONDREJOV	27 1201	1211		1202	N24 W58	4465	10	16	3	1202		4.20		
OTTAWA	27 1318	1335		1322	S18 E22	4476	17	16	3	1322	3.31	3.65		
ONDREJOV	27 1319	1326		1321	S18 E23	4476	7	1	3	1321		2.10		
WENDEL	27 1319	1332			S18 E21	4476	13	1				4.00		
ONDREJOV	27 1417	1428		1419	N23 W66	4465	11	1	3	1419		2.00		
ONDREJOV	27 1510	1515 D			S23 E38	4478	5 D	1	3				1.90	
SAC PEAK	27 1535	1705		1557 U	S28 E59	4478	7 D	26	2	1512				
OTTAWA	27 1537	1710		1552	S17 E23	4476	94	2	3	1555	10.20	4.93		
ONDREJOV	27 1537	1620 D			S15 E23	4476	53 D	2	3	1552		3.00		
ONDREJOV	27 1545	1616		1705	S19 E30	4476	31 D	2	3	1547		2.60		
OTTAWA	27 1702	1726			S23 E37	4478	24	16	3	1705	2.32	3.01		
SAC PEAK	27 1937	1945		1940	N22 W79	4465	8	1	2					
OTTAWA	27 1938			1941	N19 W75	4465	25	2	3	1941	2.32			
SAC PEAK	27 2147	2212		2157 U	N27 W78	4465	25	2	2					
MAWATI	27 2150	2210		2156	N28 W85	4465	20	26	1	2156	8.70			
AROSA	28 0645	0700			S07 W06	4476	15 D	1						
UCCLE	28 0807	0817		0814	S25 E31	4478	12 D	2	2	0805	5.10	5.60		
ZURICH	28 0807	0819			S24 E23	4478	12	1						
WENDEL	28 0807	0832			S25 E30	4478	23	1	3	809		2.00		
WENDEL	28 0812	0833			S23 E27	4478	21 D	16				5.00		
ZURICH	28 0842	0903			S24 E23	4478	21	1	3	842		3.00		
ZURICH	28 0843	0906			S22 E29	4478	23	1	3	843		1.00		
AROSA	28 0843	0855			S24 E23	4478	10 D	2				6.80		
UCCLE	28 0916	0920 D		0921	N20 W88	4465	24 D	2	4	0921	3.40	6.00		
WENDEL	28 0916	0930 D			S12 E50	4465	15 D	16						
AROSA	28 0955	1015			S12 E51	4476	20 D	1						
AROSA	28 1000	1025			S12 E54	4476	20	1						
UCCLE	28 1012	1035		1016	S12 E54	4476	23 D	1	2	1016	3.40			
AROSA	28 1012	1100 D		1043	S23 E52	4478	48 D	2	2	1043	6.80			
AROSA	28 1032	1106			S22 E52	4478	34	2						
STOCKHOLM	28 1033	1114			S22 E58	4478	18	26						
UCCLE	28 1034	1052		1038	S25 E50	4478	20 D	16	2	1038	7.90			
CAPRI S	28 1035	1055 D			S25 E50	4478	20 D	16	2	1052	3.80			
ZURICH	28 1045	1114 D			S24 E20	4478	29 D	2	3	1045		4.60		
												6.00	PAGE 8	

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL LONGPERIODIC EFFECT		
		START	END	LAT.	APPROX. MEL. DIST.	PLAGE REGION				TIME — U.T.	MEAS. AREA Sq. Deg.	CORR. Sq. Deg.	MAX. WIDTH H _g		MAX. INT. %	
ZURICH WENDEL AROSA UCCLE WENDEL UCCLE USNRL AROSA UCCLE WENDEL SAC PEAK USNRL	MAR. 1958	28 1045	E 1114 O	S24 E28	4478		29 0	1	3	1045		3.00			S-SWF	
		28 1145	E 1155	N27 W58	4469		10 0	1					3.00			
		28 1151	1237	S14 E12	4476		46 1	1								
		28 1153	1226	S15 E19	4476		33 2	2	1211	5.60						
		28 1156	1220	S15 E13	4476		24 1	1					4.00			
		28 1200	1233 O	S20 E20	4478		33 0	1	2	1218	3.40					
		28 1224	1437	S15 E12	4476		13 0	16	2	1227	3.96		1.00	106		
		28 1304	1312 O	N32 E90	4486		8 0	1					4.40			
		28 1428	1437	N20 W88	4465		9 16	3	1430	2.20						
		28 1429	1439	N22 W85	4465		10 1	1					4.40			
		28 1510	1535	N27 W90	4465		25 1	2	2	1548	2.30					
		28 1547	1622	S06 W12	4476		35 1	2					1.13	1.00		14
28 1550	E 1610	S04 W15	4476		20 0	2								G-SWF		
28 1552	E 1608	S07 W11	4476		16 0	1										
28 1707	E 1822	S15 E10	4476		73 0	26	3	1715	7.37			4.00			S-SWF	
28 1709	E 1822	S15 E08	4476		73 0	26	2	1714	5.30		2.00	7.89				
28 1722	1904	S15 E08	4476		102 16	16	2	1724	3.17			5.32			S-SWF	
28 1725	1820	N15 W25	4474		55 16	3	3	1738	4.18			5.03				
28 1735	E 1813	N20 W20	4474		37 1	1						2.76	1.00	80	S-SWF	
28 1736		S15 W27	4474		43 1	3	2	1737	2.26							
28 1738		S15 E10	4476		43 1	2						1.82			S-SWF	
28 1834	1922	N21 W50	4463		48 2	2	2	1838	1.98		2.00	6.37				
28 2042	2131	2049	S22 E20	4478		36 0	16	2	2049	5.68					S-SWF	
28 2044	2120 O	2045	S23 E23	4478		36 0	16	2	2045	3.39		5.05	2.00	106		
28 2054	E 2055 D	2054	S25 E20	4478		1 0	2	1				5.30			S-SWF	
28 2227		2240	N24 W40	4465		18 1	1	1				2.70				
28 2237		2308	S14 E03	4476		31 1	1	1				2.90			S-SWF	
28 2237		2308	S14 E03	4476		31 1	1	1				2.90				
MITAKA	29 0208	0215 O	0208	S14 E01	4476		7 0	1	1	0208	2.78	2.81	2.36	149	S-SWF	
MITAKA	29 0244	E 0250 O		N21 W90	4469		6 0	1	1	0244	1.86		3.75			
AROSA	29 0640	E 0652 O		N33 E90	4484		12 0	1							S-SWF	
AROSA	29 0648	0703		S15 E58	4480		15 1	1								
AROSA	29 0652	0708		N24 W48	4469		16 1	1							S-SWF	
WENDEL	29 0730	0736 O		N25 W58	4469		6 0	16				5.00				
MEUDON	29 0735	E 0748 O		N27 W60	4469		13 0	16				10.80				
ZURICH	29 0755	E 0806		S09 W24	4476		11 0	1	2	755	2.80				S-SWF	
ZURICH	29 0755	E 0812		S22 E18	4478		17 0	1	2	755	2.00					
ZURICH	29 0759	E 0816 O		N25 W67	4469		17 0	16	2	759	4.90				S-SWF	
ZURICH	29 0853	E 0909 O		S17 W03	4476		16 0	1	2	853	1.00					
AROSA	29 0912	1012	0923	N22 W30	4474		60 2	2							S-SWF	
MEUDON	29 0915	1010		N19 W30	4474		55 16	3				6.00				
WENDEL	29 0919	1008 O		N22 W30	4474		49 0	16				7.00			S-SWF	
ZURICH	29 0920	1018 O		N18 W31	4474		58 0	2	2	922	6.00					
CAPRI S	29 0921	E 0955 O		N21 W29	4474		34 0	1	2	941	3.00				S-SWF	
UCCLE	29 0921	1001	0934	N25 W30	4474		40 0	16	3	934	5.20					
STOCKHOLM	29 0950	E 1019 O		N20 W30	4474		29 0	1							S-SWF	
ONOREJOV	29 0953	E 1028 O		N19 W30	4474		35 0	1	2	1001			2.50			
AROSA	29 1031	1043		S06 W04	4476		12 1	1							S-SWF	
UCCLE	29 1032	1040		S06 W02	4476		8 1	1	2		2.00					
ONOREJOV	29 1033	E 1040	1035	S10 W03	4476		7 0	1	3	1035			2.70		S-SWF	
WENDEL	29 1034	1047		S06 E00	4476		13 1	1								
AROSA	29 1055	1100		N33 E70	4484		5 1	1			4.00				S-SWF	
ONOREJOV	29 1217	E 1227		S25 E19	4478		10 0	1	3	1222			2.80	9		

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DATA TION — MINUTES	IN- PGR- TANCE	OBS. COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG.				MEAS. SOL. WIDTH	CONTR. AREA SOL. WIDTH	MAX. WIDTH	
WENDEL	29 1218	1235	1343	S23 E15	4478	17	1	3	2.38	3.00	11.20	S-SWF
OTTAWA	29 1339	1405	1346	N36 E76	4484	26	16	3	1346	6.00	4.00	20
ONDRÉJOV	29 1340	1400	1346	N36 E73	4484	20	16	3	1346	5.00	2.16	20
WENDEL	29 1343	1407	1346	N33 E80	4484	24	16	3	1346	2.50	2.20	95
WENDEL	29 1345	1421	1346	N32 E78	4484	15	1	3	1346	1.62	1.40	95
OTTAWA	29 1345	1421	1346	N37 E90	4483	16	16	3	1346	2.50	2.50	30
ONDRÉJOV	29 1353	1408	1357	S17 E82	4483	18	16	3	1357	2.83	2.83	32
OTTAWA	29 1356	1408	1357	S18 E83	4483	18	16	3	1357	2.83	2.83	32
SAC PEAK	29 1401	1421	1409	S18 E82	4483	15	1	3	1409	2.83	2.83	32
OTTAWA	29 1401	1421	1409	S18 E82	4483	15	1	3	1409	2.83	2.83	32
WENDEL	29 1403	1421	1409	S15 E29	4480	14	1	3	1413	2.83	2.83	32
ONDRÉJOV	29 1410	1416	1413	S15 E29	4480	14	1	3	1413	2.83	2.83	32
OTTAWA	29 1439	1446	1413	S15 E29	4480	14	1	3	1413	2.83	2.83	32
ONDRÉJOV	29 1448	1502	1450	S25 W67	4476	5	1	3	1448	2.83	2.83	32
USNRL	29 1449	1507	1450	S25 W67	4476	5	1	3	1448	2.83	2.83	32
MCNATH	29 1450	1507	1450	N27 W70	4469	18	1	2	1450	2.83	2.83	32
ONDRÉJOV	29 1450	1507	1450	N27 W70	4469	18	1	2	1450	2.83	2.83	32
ONDRÉJOV	29 1507	1512	1507	S10 W09	4476	5	1	3	1510	2.83	2.83	32
SAC PEAK	29 1547	1637	1607	S17 W11	4476	53	1	2	1557	2.83	2.83	32
USNRL	29 1552	1617	1557	S15 W10	4476	53	1	2	1557	2.83	2.83	32
ONDRÉJOV	29 1820	1910	1822	S23 E08	4478	50	16	1	1822	2.83	2.83	32
SAC PEAK	29 1822	1840	1822	S32 E05	4478	18	1	1	1822	2.83	2.83	32
HAWAII	29 1825	1840	1822	S32 E05	4478	18	1	1	1822	2.83	2.83	32
MCNATH	29 2132	2134	2133	S11 W05	4476	2	16	1	2134	2.83	2.83	32
HAWAII	29 2132	2134	2133	S38 E87	4484	2	16	1	2134	2.83	2.83	32
SAC PEAK	29 2133	2150	2133	N36 E85	4484	17	16	1	2133	2.83	2.83	32
MITAKA	30 0021	0046	0022	S08 W13	4476	25	16	1	0029	2.83	2.83	32
MITAKA	30 0102	0109	0102	N36 E67	4484	7	1	3	0109	2.83	2.83	32
MITAKA	30 0149	0200	0156	S08 W14	4476	11	1	1	0150	2.83	2.83	32
MITAKA	30 0152	0203	0156	N36 E66	4484	11	1	1	0156	2.83	2.83	32
MITAKA	30 0221	0229	0217	N36 E66	4484	14	1	1	0216	2.83	2.83	32
MITAKA	30 0221	0235	0217	S06 W11	4476	14	1	1	0225	2.83	2.83	32
MITAKA	30 0401	0415	0408	S08 W07	4476	14	1	1	0408	2.83	2.83	32
MITAKA	30 0456	0509	0458	N36 E65	4484	13	1	1	0459	2.83	2.83	32
ATHENS	30 0606	0628	0606	N36 E62	4484	22	1	3	0606	2.83	2.83	32
ATHENS	30 0655	0702	0655	N34 E67	4484	7	1	3	0655	2.83	2.83	32
ATHENS	30 0656	0718	0656	N36 E62	4484	22	1	3	0656	2.83	2.83	32
AROSA	30 0755	0806	0755	N14 W47	4474	11	1	1	0755	2.83	2.83	32
WENDEL	30 0755	0812	0755	N14 W47	4474	11	1	1	0755	2.83	2.83	32
USCCLL	30 0811	0827	0815	S18 E43	4480	16	1	4	0815	2.83	2.83	32
MOSCOW	30 0817	0846	0815	N30 E60	4484	29	16	4	0815	2.83	2.83	32
AROSA	30 0820	0830	0820	S15 W10	4476	10	1	1	0820	2.83	2.83	32
WENDEL	30 0842	0851	0844	N34 E69	4484	9	1	4	0844	2.83	2.83	32
USCCLL	30 0842	0853	0844	N34 E69	4484	9	1	4	0844	2.83	2.83	32
AROSA	30 0843	0850	0844	N34 E66	4484	11	1	4	0844	2.83	2.83	32
USCCLL	30 0850	1000	0915	S23 W12	4478	70	2	4	0915	2.83	2.83	32
SCHAUBINS	30 0915	1330	0915	S14 W21	4476	255	2	4	0915	2.83	2.83	32
ZURICH	30 0938	0958	0941	N36 E69	4484	20	1	3	0941	2.83	2.83	32
ZURICH	30 0941	0944	0941	N23 W68	4469	3	1	3	0941	2.83	2.83	32
WENDEL	30 0944	1106	0959	S12 W16	4476	82	16	3	0959	2.83	2.83	32
WENDEL	30 0944	1230	0959	S16 W19	4476	166	26	3	0959	2.83	2.83	32
USCCLL	30 0945	1042	0957	S18 W20	4476	57	1	3	0957	2.83	2.83	32
USCCLL	30 0945	1421	0957	S17 W22	4476	276	26	4	0957	2.83	2.83	32

SOLAR FLARES

MARCH 1958

OBSERVATORY	DATE	OBSERVED		LOCATION			DURA- TION MINUTES	IN- FOR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	APPROX. LONG.				TIME UT	AREA Sq. Deg.	CORR. Sq. Deg.	MAX. WIDTH Km	MAX. INT. %
ZURICH	30	0952	1042	1002	S11 W18	4476	50	1	3	1002	3.00			
AROSA	30	1000	1100		S18 W21	4476	60	2						
UCCLE	30	1007	1054	1020	S12 W20	4476	47	2	4	1020	5.60			
CAPRI S	30	1010	1032	D	S17 W19	4476	22	2	1	1015	2.40			
STOCKHOLM	30	1011	1020	D	S13 W15	4476	9	2						
MEUDON	30	1017	1030	D	S20 W20	4476	13	2			2.00			
MEUDON	30	1017	1030	D	S20 W20	4476	13	2			6.00			
WENDEL	30	1042	1100		S13 W13	4476	18	1			3.00			
UCCLE	30	1113	1118	1115	S25 E04	4478	5	1	4	1115	2.20			
UCCLE	30	1114	1134	1121	N36 E80	4484	20	1	4	1121	2.20			
CAPRI S	30	1120	1205	D	S18 W21	4476	45	1	4	1155	2.20			
MEUDON	30	1148	1210	D	S20 W20	4476	22	1	4	1250	2.20			
UCCLE	30	1249	1316	1250	N23 W90	4469	27	16	4		4.50			
MEUDON	30	1300	1351	D	S20 W20	4476	51	1						
UCCLE	30	1422	1429	1425	S08 W16	4476	7	1	4	1425	2.20			
UCCLE	30	1455	1504	1457	S20 W07	4478	9	1	4	1457	2.20			
UCCLE	30	1533	1621	1544	N36 E80	4484	48	2	2	1544	3.40			
WENDEL	30	1540	1602	D	N33 E61	4484	25	1			5.80			
CAPRI S	30	1547	1557	D	N35 E65	4484	17	1	2	1546	2.30			S-SHF
WENDEL	30	1614	1626		N34 E65	4484	12	1			4.00			
MITAKA	30	1623	E		N38 E60	4484	4	1	1	1624	3.15			G-SHF
SAC PEAK	30	1740	1827	U	S16 E37	4480	47	1	2		3.60			
SAC PEAK	30	1747	1800	1755	N35 E64	4484	13	1	2		2.40			
SAC PEAK	30	2007	2117	U	N23 W51	4474	70	2	2		5.10			
HAWAII	30	2010	2112	2016	N20 W50	4474	62	2	1	2016	3.50			
HAWAII	30	2036	E	2036	S07 W21	4476	4	1	1	2036	2.00			
SCHAUINS	30	2114	E	0129	S15 E09	4476	25	2			6.40			
HAWAII	30	2114	E	0129	S07 E60	4484	18	2	1	2158	2.60			S-SHF
HAWAII	30	2130	E	2208	S07 W22	4476	16	16	1	2309	5.00			
MITAKA	30	2347	2353	2308	S08 W51	4476	6	16	1	2351	9.45		1.83	146
SYDNEY	31	0005	0025	0015	S15 W20	4476	20	1			8.56		3.34	227
MITAKA	31	0008	0036	0012	S13 W24	4476	28	2	1	0008	7.20			S-SHF
HAWAII	31	0014	E	0020	S16 W27	4476	6	2	1	0018	8.10			
HAWAII	31	0028	E	0032	N38 E55	4484	4	2	1	0032	2.70			
MITAKA	31	0028	E	0030	N35 E54	4484	10	16	1	0031	3.80		7.65	149
SYDNEY	31	0040	E	0110	S08 W22	4476	30	1			9.43		4.32	278
MITAKA	31	0049	E	0113	S07 W24	4476	24	2	1	0052	10.00			
MITAKA	31	0050	E	0106	D	0052	16	2	1	0052	6.00		2.99	120
MITAKA	31	0119	E	0124	S07 W25	4476	5	2	1	0120	1.84		2.37	149
MITAKA	31	0146	E	0200	S15 W21	4476	14	1	1	0149	1.86		3.00	125
MITAKA	31	0231	E	0244	N35 E53	4484	13	2	1	0233	3.80			
SYDNEY	31	0314	0345	0320	S05 W50	4476	31	1			9.73		2.93	96
MITAKA	31	0423	E	0427	N23 W74	4469	4	1	1	0423	3.12		2.29	
MITAKA	31	0535	0555	D	N23 W75	4469	20	1	1	0545	.89			
ATHENS	31	0650	0704		N25 W72	4469	14	1	3		.80			
MITAKA	31	0856	E	0904	S19 E28	4480	8	1	3	0856	2.43		1.60	
MITAKA	31	0901	E	0914	S18 E27	4480	13	1	3					
STOCKHOLM	31	1015	E	1025	N20 E61	4485	10	1						
AROSA	31	1015	E	1025	S09 W27	4476	6	1						
UCCLE	31	1026	1032		N23 W90	4469	21	1	2					
UCCLE	31	1119	1140		N22 E66	4485	11	1	2					
UCCLE	31	1120	1131		S18 E27	4480	3	1	2	1146	2.10		2.30	
UCCLE	31	1143	E	1146	S07 W69	4476	4	1	2	1445	2.00		4.00	
UCCLE	31	1244	1448	1445	S14 W40	4476	17	1	4	1528	1.70		2.60	
AROSA	31	1325	E	1328	S15 W40	4476	10	1						
UCCLE	31	1325	E	1328	S12 W40	4476	13	1						
SAC PEAK	31	1332	1352	1340	S12 W42	4476	15	1	3		3.30			20
SAC PEAK	31	1332	1352	1340	S12 W42	4476	15	1	3		2.50			27
SAC PEAK	31	2305	E	2332	S21 E52	4483	27	1	1					16

COMMERCIAL - STANDARDS - BOULDER

SAC PEAK: ALL VALUES IN MAX. INT. COLUMN ARE ARBITRARY UNITS (0-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

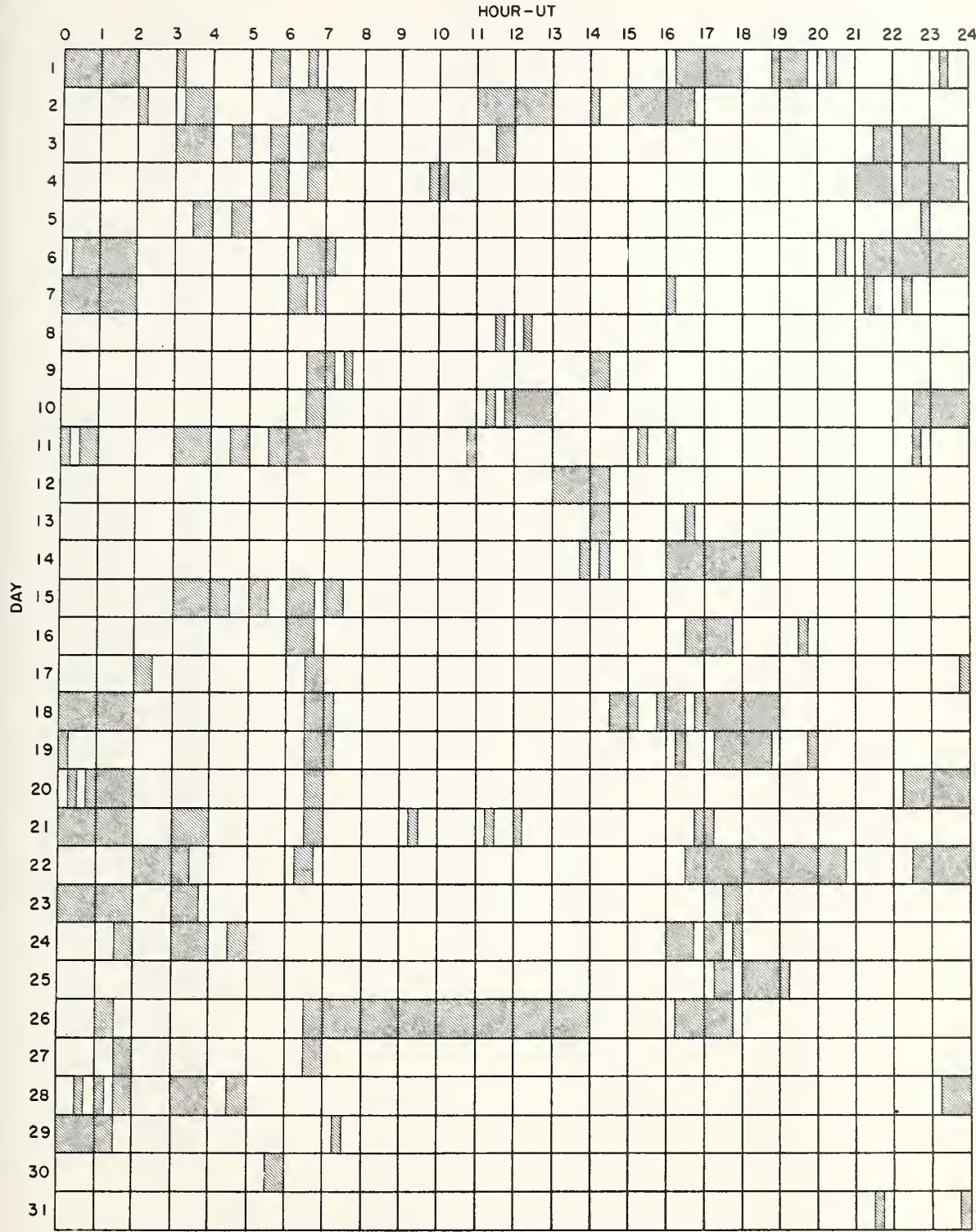
E - LESS THAN
D - GREATER THAN
U - APPROXIMATE
+ - PLUS
- - MINUS

ANACAPRI SWEDISH
KODAIKANAL
KRASNAYA PAKHRA
ROYAL OBSERVATORY, EDINBURGH
GREENWICH ROYAL OBSERVATORY, HERSTMONCEUX
SAC PEAK
SCHAUINSLAND
UNITED STATES NAVAL RESEARCH LABORATORY

CAPRI S
KODAIKANAL
KRASNAYA
R O EDIN
R O HERST
SAC PEAK
SCHAUINS
USNR.

INTERVALS OF NO FLARE PATROL OBSERVATIONS

MARCH 1958



COMMERCE - STANDARDS - BOULDER

Anacapri (Swedish)
Arcetri
Arosa
Athens
Climax
Greenwich Royal Observatory,
Herstmonceux

Hawaii
Huancayo
Kodaikanal
Meudon
Mitaka
Nizamia
Ondrejov

Ottawa
Royal Observatory, Edinburgh
Sacramento Peak
Uccle
U. S. Naval Research Laboratory
Zurich

SUBFLARES NOTED AS FOLLOWS: DATE - UNIVERSAL TIME - COORDINATES

FEBRUARY 1958

WENDEL 01 0848 E 506 W03
 UCCLE 01 0901 509 E67
 UCCLE 01 0914 531 E20
 WENDEL 01 0945 E 506 W02
 UCCLE 01 0959 530 W55
 WENDEL 01 1042 E 530 W51
 SAC PEAK 01 1935 N27 W33
 SAC PEAK 01 2140 521 E90
 SAC PEAK 01 2217 521 E90

 ATHENS 02 0808 E 505 W14
 WENDEL 02 1212 E 506 W18
 WENDEL 02 1245 E 506 W18
 USNRL 02 1444 519 W90
 SAC PEAK 02 1612 512 E77
 SAC PEAK 02 1615 506 W24
 SAC PEAK 02 1640 512 E74
 SAC PEAK 02 1855 513 E74
 CLIMAX 02 1856 511 E76

 ATHENS 03 0729 512 E33
 UCCLE 03 1007 512 E34
 UCCLE 03 1042 512 E33
 UCCLE 03 1103 512 E34
 UCCLE 03 1111 520 E85
 * R O HERST 03 1207 E 511 E31
 UCCLE 03 1248 527 W85
 UCCLE 03 1251 512 E34
 UCCLE 03 1303 511 E70
 UCCLE 03 1311 517 E82
 UCCLE 03 1437 E 512 E32
 CAPRI S 03 1449 E 512 E33
 * SAC PEAK 03 1530 520 E78
 SAC PEAK 03 1540 510 E58
 SAC PEAK 03 1540 528 W80
 SAC PEAK 03 1648 511 E28
 CLIMAX 03 1850 512 E63
 * CLIMAX 03 1855 522 E79
 * SAC PEAK 03 1856 E 520 E77
 SAC PEAK 03 2015 520 E77
 * SAC PEAK 03 2039 512 E28
 SAC PEAK 03 2200 U N19 E57
 SAC PEAK 03 2230 E 512 E25
 SAC PEAK 03 2230 N24 W58

 * CAPRI S 04 0855 E 511 E51
 * USNRL 04 1324 511 E16
 USNRL 04 1337 510 E18
 USNRL 04 1425 N13 E05
 USNRL 04 1429 509 E15
 USNRL 04 1457 510 E16
 SAC PEAK 04 1510 E 513 E14
 USNRL 04 1512 511 E15
 USNRL 04 1518 N06 W10
 SAC PEAK 04 1617 514 E67
 SAC PEAK 04 1712 513 E13
 CLIMAX 04 1721 513 E14
 SAC PEAK 04 1725 515 E19
 CLIMAX 04 1852 N19 E44
 USNRL 04 1853 N21 E45
 CLIMAX 04 1942 512 E44

 ATHENS 05 0714 N19 E37
 ATHENS 05 0721 512 E05
 OTTAWA 05 1517 E 507 E34
 CLIMAX 05 1819 519 E29
 CLIMAX 05 1903 510 W28
 CLIMAX 05 1932 519 E27
 CLIMAX 05 1946 513 E19

 ATHENS 06 0840 E 512 W08
 * CAPRI S 06 1153 E 510 W10
 * R O EDIN 06 1154 511 W14
 OTTAWA 06 1447 E 510 W11
 SAC PEAK 06 1640 516 E22
 OTTAWA 06 1641 E 516 E22
 SAC PEAK 06 1650 513 W08
 * SAC PEAK 06 1652 N30 W90
 OTTAWA 06 1652 E 513 W07
 USNRL 06 1725 E 518 E37
 OTTAWA 06 1746 E 518 E29
 SAC PEAK 06 1802 511 W12
 USNRL 06 1803 511 W12
 OTTAWA 06 1803 E 511 W11
 SAC PEAK 06 2100 510 W13

 SAC PEAK 07 1502 E 521 E23
 SAC PEAK 07 1502 N30 W90
 SAC PEAK 07 1700 N30 W90
 SAC PEAK 07 1710 521 E26
 SAC PEAK 07 1710 510 W26
 SAC PEAK 07 1815 521 E26
 SAC PEAK 07 1837 N17 E90
 SAC PEAK 07 1905 511 W28
 SAC PEAK 07 1925 N15 E71
 SAC PEAK 07 1925 521 E26
 SAC PEAK 07 1945 514 E18
 HUANCAYO 07 2000 513 E16
 SAC PEAK 07 2150 521 E25
 SAC PEAK 07 2225 E 510 W31
 HAWAII 07 2336 E 520 E32
 HAWAII 07 2336 E 510 W31

 HAWAII 08 0114 512 W34
 ATHENS 08 0722 511 W36
 ATHENS 08 0839 513 E10
 UCCLE 08 0936 521 E19
 USNRL 08 1338 520 E16

USNRL 08 1407 512 W42
 CLIMAX 08 1625 519 E18
 USNRL 08 1628 520 E13
 SAC PEAK 08 1650 E 521 E11
 CLIMAX 08 1738 518 E10
 MC MATH 08 1745 518 E08
 SAC PEAK 08 1927 512 W45
 SAC PEAK 08 2042 E 519 E07

 * ATHENS 09 0700 E 511 W48
 * ATHENS 09 0753 511 W51
 UCCLE 09 0857 N08 W72
 UCCLE 09 0905 E 517 W14
 SAC PEAK 09 1515 U 515 E08
 ZURICH 09 1530 E 513 E07
 SAC PEAK 09 1710 514 W56
 HAWAII 09 2054 517 W58
 HAWAII 09 2118 517 E07
 SAC PEAK 09 2142 N19 E09
 HAWAII 09 2144 N20 E02
 SAC PEAK 09 2157 512 W54
 HAWAII 09 2200 517 W57

 WENDEL 10 0834 E 522 W08
 UCCLE 10 0908 E 516 W00
 UCCLE 10 0917 513 W69
 UCCLE 10 1012 N14 E35
 * MEUDON 10 1129 E 514 W60
 WENDEL 10 1205 E 516 W01
 UCCLE 10 1205 520 W37
 UCCLE 10 1256 521 W11
 OTTAWA 10 1433 516 W03
 USNRL 10 1443 517 W05
 SAC PEAK 10 1450 E 514 W03
 USNRL 10 1509 N17 E42
 SAC PEAK 10 1510 N15 E43
 * SAC PEAK 10 1540 521 W13
 UCCLE 10 1541 E N08 E35
 USNRL 10 1542 522 W13
 SAC PEAK 10 1900 516 W23
 USNRL 10 1901 518 W23
 * HAWAII 10 1904 516 W65
 HAWAII 10 2326 523 W18

 ATHENS 11 0745 521 W18
 * ATHENS 11 0749 518 W27
 ATHENS 11 0753 N11 E08
 ATHENS 11 0824 516 W39
 UCCLE 11 0952 E 520 W48
 USNRL 11 1319 523 W25
 USNRL 11 1615 N12 E20
 CLIMAX 11 1620 E N12 E18
 USNRL 11 1658 N22 E18
 USNRL 11 1753 N12 E18
 USNRL 11 1834 E 522 W46
 HUANCAYO 11 1855 519 W42
 USNRL 11 1900 522 W45
 * HUANCAYO 11 1940 519 W23

 ATHENS 12 0637 E 515 W28
 WENDEL 12 1113 E 512 W62
 WENDEL 12 1127 E 516 W47
 CAPRI S 12 1211 E N12 E18
 SAC PEAK 12 1550 N11 E05
 USNRL 12 1551 N11 E07
 USNRL 12 1600 N10 E05
 SAC PEAK 12 1632 N14 E04
 CLIMAX 12 1633 N14 E03
 CLIMAX 12 1645 N09 E03
 SAC PEAK 12 1645 N08 E03
 USNRL 12 1646 N09 E05
 USNRL 12 1719 N25 E05
 CLIMAX 12 1737 N11 E03
 SAC PEAK 12 1745 N10 E05
 USNRL 12 1748 N11 E04
 USNRL 12 1753 510 W90
 USNRL 12 1757 510 W60
 USNRL 12 1851 512 W90
 SAC PEAK 12 2127 N07 E07
 SAC PEAK 12 2127 N22 E69

 UCCLE 13 0946 N09 W05
 UCCLE 13 1017 N15 W06
 ZURICH 13 1446 N07 W08
 USNRL 13 1830 N24 E01

 UCCLE 14 0942 N25 W65
 UCCLE 14 1130 N13 W17
 CAPRI S 14 1259 E N11 W13
 SAC PEAK 14 1642 N17 W12
 USNRL 14 1644 N17 W12
 SAC PEAK 14 1737 N11 W24

 ATHENS 15 0713 526 W72
 UCCLE 15 0923 516 W75
 WENDEL 15 1347 E 512 W33
 SAC PEAK 15 1742 N12 W37
 SAC PEAK 15 1807 N13 W35
 SAC PEAK 15 1920 N12 W37

 SAC PEAK 16 1515 E N25 W43
 SAC PEAK 16 1610 N25 W46
 HAWAII 16 2020 512 E20
 HAWAII 16 2302 N09 W80
 HAWAII 16 2326 527 W06

 UCCLE 17 1052 515 E44

UCCLE 17 1055 517 E44
 UCCLE 17 1139 N12 W63
 SAC PEAK 17 1600 N13 W57
 SAC PEAK 17 1637 N12 W58
 SAC PEAK 17 1855 N07 W80
 SAC PEAK 17 2150 N09 W61
 SAC PEAK 17 2225 525 E60

 UCCLE 18 1219 512 W09
 UCCLE 18 1414 E 525 W25
 MC MATH 18 1438 N07 W02
 MC MATH 18 1540 522 W32
 SAC PEAK 18 1542 510 E54
 SAC PEAK 18 1542 526 W27
 * USNRL 18 1621 515 W05
 CLIMAX 18 1624 512 W02
 SAC PEAK 18 1922 528 W23

 UCCLE 19 1259 N11 W16
 SAC PEAK 19 1507 E N10 W18
 SAC PEAK 19 1555 N10 W89
 SAC PEAK 19 1620 N21 W90
 USNRL 19 1622 N20 W90
 USNRL 19 1843 N09 W22
 SAC PEAK 19 1900 N21 W90
 USNRL 19 1901 N19 W90
 * SAC PEAK 19 1912 515 W21
 * HAWAII 19 2010 E N21 E10
 USNRL 19 2012 N20 W90

 CLIMAX 20 1822 N11 E21
 USNRL 20 1851 524 E10
 USNRL 20 1908 512 E16
 USNRL 20 1954 515 W09

 ATHENS 21 0738 525 E02
 ATHENS 21 0853 N11 E13
 CAPRI S 21 1453 E 522 W01
 CLIMAX 21 1533 515 E09
 USNRL 21 1535 513 E09
 CLIMAX 21 1607 513 E04
 USNRL 21 1608 513 E05
 * USNRL 21 1646 513 E05
 USNRL 21 1710 504 W20
 USNRL 21 1846 512 E02
 USNRL 21 2046 512 E02

 ATHENS 23 0645 E N20 W32
 * CLIMAX 23 2049 511 W04

 ATHENS 24 0723 N04 W54
 ATHENS 24 0727 N13 E16
 ATHENS 24 0730 534 E80
 USNRL 24 1227 E 519 W26
 USNRL 24 1256 E 513 E12
 USNRL 24 1306 525 W11
 USNRL 24 1323 505 W60
 USNRL 24 1346 520 W43
 USNRL 24 1446 522 W41
 USNRL 24 1842 506 E38
 SAC PEAK 24 1845 504 E38
 USNRL 24 1901 505 E08
 USNRL 24 1905 516 W36
 USNRL 24 1906 N15 E39
 SAC PEAK 24 1912 N13 E39
 SAC PEAK 24 1945 U 515 E07
 USNRL 24 1948 E 514 E08

 WENDEL 25 1123 E 507 W34
 WENDEL 25 1127 E 511 E01
 WENDEL 25 1138 E 524 E66
 USNRL 25 1317 524 W49
 USNRL 25 1434 518 W48
 * SAC PEAK 25 1630 512 W52
 MC MATH 25 2119 522 W60
 USNRL 25 2120 523 W60

 UCCLE 26 1439 E 527 W48
 SAC PEAK 26 2100 512 W16

 R O HERST 27 1226 E 512 W21
 SAC PEAK 27 1637 514 W26
 * SAC PEAK 27 1745 E 511 W28
 SAC PEAK 27 1925 N12 W32
 SAC PEAK 27 1935 521 W80
 SAC PEAK 27 1955 N34 E15
 SAC PEAK 27 2025 513 W27
 SAC PEAK 27 2107 522 E90
 SAC PEAK 27 2137 514 W28
 SAC PEAK 27 2200 513 W29
 SAC PEAK 27 2245 514 W29

 SAC PEAK 28 1730 513 W38
 SAC PEAK 28 1820 516 E90
 SAC PEAK 28 2040 516 E90
 SAC PEAK 28 2130 514 W38
 SAC PEAK 28 2250 510 W44

* Rated as flare of importance ≥ 1 by other observatories (See CRPL-F Part B).

IONOSPHERIC EFFECTS OF SOLAR FLARES

(SHORT-WAVE RADIO FADEOUTS)

FEBRUARY 1958

Feb. 1958	Start UT	End UT	Type	Wide Spread Index	Importance	Observation Stations	Known Flare, UT CRPL-F 163 B
2	1707	1745	Slow S-SWF	5	2+	<u>BE</u> , CR, HU, MC, PR, WS	
3	1547	1550	Slow S-SWF	2	1+	HU, <u>PR</u>	1522
5	1035	1125	Slow S-SWF	5	2+	<u>HU</u> , <u>JU</u>	
6	0053	0105	S-SWF	3	1	AD, <u>CA</u>	
6	1658	1718	G-SWF	4	1+	AN, HU, MC, <u>PR</u>	1652E
6	1724	1752	Slow S-SWF	5	2-	BE, <u>CR</u> , HU, MC, PR, WS, CW*	
8	0406	0425	S-SWF	4	1+	CA, <u>OK</u> , TO, CW+	*
8	1112	1130	S-SWF	3	2	KU, NE, <u>PU</u>	*
8	1755	1850	G-SWF	4	3-	BE, HU, <u>MC</u> , PR, WS	1740
9	0210	0235	Slow S-SWF	5	2	AD, <u>CA</u> , <u>OK</u> , TO	0207
9	0558	0610	S-SWF	1	1+	<u>KO</u>	0548E
9	0654	0739	S-SWF	4	3	<u>KO</u> , NE	0658
9	0843	0902	S-SWF	4	2	<u>KO</u> , KU	0837E
9	1332	1418	S-SWF	5	3	BE, HU, MC, NE, PR, <u>PU</u>	1330
9	1421	1436	S-SWF	5	2	BE, HU, MC, <u>NE</u> , PR, <u>PU</u>	1415
9	1935	1957	G-SWF	3	1+	<u>HU</u> , MC, PR	
9	2124	2144	Slow S-SWF	5	1	<u>CA</u> , HU, <u>TO</u> , WS	2108
10	1325	1400	S-SWF	5	3	BE, DA, HU, MC, NE, <u>PR</u> , <u>PU</u>	1323
10	1903	1950	S-SWF	4	3	BE, HU, <u>MC</u> , PR, WS	1900
11	0809	0837	S-SWF	5	3	JU, KO, ND, <u>PU</u>	0820
11	1322	1335	S-SWF	5	1	HU, <u>KU</u>	1319E
11	1345	1410	S-SWF	5	3	HU, <u>JU</u> , <u>PR</u>	1342
12	1750	1840	G-SWF	4	3-	BE, CR, HU, <u>WS</u>	
12	1840	1930	S-SWF	4	3-	BE CR, HU, PR, <u>WS</u>	1839
15	1628	1740	G-SWF	4	1+	AN, BE, <u>MC</u> , WS	
15	1955	2023	G-SWF	4	2	<u>HU</u> , MC, PR, WS	1957
17	1218	1255	S-SWF	2	1+	<u>BE</u> , PR	*
19	1630	1715	G-SWF	3	2	<u>HU</u> , PR	1630
25	0505	0541	S-SWF	1	1	<u>OK</u>	0445
25	2008	2040	Slow S-SWF	4	2	<u>BE</u> , MC, PR, WS	1954
26	0432	0508	G-SWF	3	2+	<u>KO</u> , OK, TO	0449E
26	0540	0636	Slow S-SWF	4	2+	<u>KO</u> , OK, TO, CW+	0547
27	0318	0415	Slow S-SWF	3	1+	AD, <u>OK</u>	*
27	1153	1307	S-SWF	1	3	<u>PU</u>	1155
27	1420	1501	G-SWF	4	2-	<u>HU</u> , MC, PR, WS	

COMMERCE - STANDARDS - BOULDER

* No known flare patrol at this time.

CA = Canberra, Australia.

CR = Cornell University, N.Y.

DA = Darmstadt, G.F.R.

HH = Heinrich Hertz Institute, Berlin.

JU = Juhlesruh, G.D.R.

KO = Kodaikanal.

KU = Kuhlungsborn

NE = Nederhorst den Berg, Netherlands.

PU = Prague, Czech.

SW = Enkoping, Sweden.

TO = Hiraio Radio Wave Observatory, Japan.

ZU = Zurich, Switzerland.

CW* = Barbadoes.

CW+ = Hong Kong

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OTTAWA

MARCH 1958

2800 MC

Mar. 1958	Type*	Start UT Hrs:Mins	Duration Hrs:Mins	Maximum		Remarks
				Time UT Hrs:Mins	Peak Flux	
3	1 Simple 1 f	21 47	1	21 47.8	5	
4	1 Simple 1	15 32.5	4	15 33.5	6	
4	2 Simple 2	16 04.5	2.5	16 05.5	28	
4	1 Simple 1 f	17 23	5	17 24.5	6	
5	3 Simple 3 A	16 36	35	indet.	9	
	8 Group (2)	16 44.2	4.2			
	1 Simple 1	16 44.2	2	16 44.9	6	
	1 Simple 1	16 48.2	0.2	16 48.3	6	
5	1 Simple 1	17 20.5	1.5	17 21	3	
5	1 Simple 1	20 57.5	4	20 59.5	6	
6	2 Simple 2	22 28.8	2	22 29.3	16	
7	6 Complex	18 14	2.5	18 15	90	
8	6 Complex f	13 26	5	13 26.8	88	
8	3 Simple 3 A	17 22	1 40	17 43	13	
	8 Group (2)	17 22.4	9.6			
	2 Simple 2	17 22.4	2.5	17 23.4	26	
	1 Simple 1	17 28	4	17 29.5	7	
	6 Complex	18 00	6	18 02.4	11	
	6 Complex	18 55	5.5	18 56.3	7	
8	2 Simple 2	20 59.2	2.5	21 01	9	
9	2 Simple 2	15 43	8	15 45.9	85	
	4 Post Increase A		5 15		22	
	2 Simple 2	20 07.3	2	20 07.9	9	
10	6 Complex	13 15.2	9	13 16.1	51	
10	1 Simple 1	18 25.2	1.8	18 25.8	6	
10	3 Simple 3 A	20 24	1 30	20 35	10	
	6 Complex f	20 28	7	20 32.5	72	
	2 Simple 2	21 31.8	1.4	21 32.4	13	
11	3 Simple 3 A	15 00	> 35	indet.	13	
	6 Complex	15 12.6	10	15 16.6	50	
12	3 Simple 3 A	14 28	47	14 43	9	
	2 Simple 2	14 37	2.5	14 38	33	
12	2 Simple 2	17 02.4	1.3	17 02.8	10	
12	1 Simple 1	20 42.5	1.5	20 43.1	6	
13	6 Complex	13 10.5	4	13 13	6	
13	1 Simple 1	16 20.3	1	16 20.8	6	
13	2 Simple 2	22 16.5	4	22 17.2	10	
14	9 Precursor	14 53	5.5		13	
	6 Complex	14 58.5	13	15 01	210	
	4 Post Increase		2 45		40	
15	2 Simple 2	18 19.8	1.5	18 20.3	9	
15	1 Simple 1	19 07.5	4	19 09	6	
15	1 Simple 1	21 11.5	1	21 12	6	
16	1 Simple 1	14 10	2.5	14 11.2	3	
16	1 Simple 1	15 33	3	15 34.5	2	
19	2 Simple 2	17 27.5	2.5	17 28.5	13	
19	2 Simple 2	19 09.5	5	19 11	37	
	4 Post Increase		35		6	
19	2 Simple 2 f	21 07	9	21 09.5	14	
	4 Post Increase		30			
20	8 Group (2)	13 04	16.5			
	2 Simple 2	13 04	5	13 04.7	350	
	2 Simple 2	13 17	3.5	13 18.2	14	
20	3 Simple 3 A	14 54	40	14 59	16	
	2 Simple 2	14 54.6	2.5	14 55.2	32	
20	3 Simple 3	18 50	45	19 02	7	
20	3 Simple 3 f	20 47	15	20 52	7	
20	1 Simple 1	21 41.5	2.5	21 42.5	3	
21	1 Simple 1	13 11	1.5	13 11.7	7	
21	3 Simple 3 f	18 55	40	18 59.3	18	
21	3 Simple 3 f	21 15	35	21 17.2	8	
22	2 Simple 2	12 07	1.5	12 07.4	12	
22	3 Simple 3 f A	18 04	3	18 23	26	
	2 Simple 2 f	18 42.2	15	18 44	160	
23	3 Simple 3 A	b11 15	> 9	indet.	45*	*estimated (in sunrise)
	7 Period Irreg. Activity	b11 15	> 4 35	11 34	300*	
	2 Simple 2	18 26.2	4	18 27.2	20	
24	2 Simple 2	11 38.5	1.5	11 39	30	

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

OTTAWA

MARCH 1958

2800 MC

Mar. 1958	Type*	Start UT Hrs:Mins	Duration Hrs:Mins	Maximum		Remarks
				Time UT Hrs:Mins	Peak Flux	
25	2 Simple 2	14 13.7	2	14 14.3	46	In sunset osc.
25	3 Simple 3 f	14 53.5	40	14 58.5	7	
25	1 Simple 1 f	18 17.3	1	18 17.8	6	
26	2 Simple 2	12 55	2.5	12 55.8	30	
26	2 Simple 2	13 28.5	4	13 29	100	
27	2 Simple 2	11 59.8	14	12 00.6	470	
27	8 Group (2)	13 20	5			
	1 Simple 1	13 20	1	13 20.3	5	
	2 Simple 2	13 24	1	13 24.5	11	
27	2 Simple 2 f	15 05	2	15 06	85	
27	6 Complex	15 43.8	11	15 46.4	220	
	4 Post Increase A		3 10		50	
	6 Complex f	17 01	6	17 03	162	
	4 Post Increase		25		12	
27	1 Simple 1	19 38	3	19 38.5	7	
27	1 Simple 1	21 04.8	1	21 05.1	6	
27	2 Simple 2	21 48.8	6	21 49.7	93	
27	2 Simple 2	23 04	3	23 05	60	
28	7 Period Irreg. Activity	11 47	40	11 58.5	16	
28	8 Group (2)	15 46.5	10.5			
	2 Simple 2	15 46.5	3	15 47.9	9	
	1 Simple 1	15 52	5	15 54.5	4	
28	9 Precursor f	17 02.5	6		7	
	2 Simple 2 f	17 08.5	14	17 11.5	575	
	4 Post Increase A		2 20		60	
	2 Simple 2	18 35	3.5	18 35.7	100	
28	2 Simple 2 f	20 23.3	5	20 25	9	
28	6 Complex	20 43	33	20 45.1	520	
28	3 Simple 3 f	21 25	40	indet.	24	
29	7 Period Irreg. Activity	12 05	35	12 22.9	53	
29	1 Simple 1	13 02	1	13 02.5	6	
29	2 Simple 2 f	13 40.5	10	13 42	310	
29	2 Simple 2	14 08.6	2.5	14 09	38	
29	1 Simple 1	14 34.4	0.3	14 34.5	7	
29	6 Complex	14 47.1	4	14 49.1	42	
29	1 Simple 1	15 29.5	1	15 30	4	
29	3 Simple 3 A	15 36	1 10	15 56	22	
	1 Simple 1	16 27	3	16 28.5	7	
29	1 Simple 1	16 52	1	16 52.5	7	
29	2 Simple 2	18 20.5	12.5	18 21.8	1400	
	4 Post Increase		1 30		34	
29	8 Group (4)	21 17.5	20.4			
	1 Simple 1	21 17.5	1	21 17.9	7	
	1 Simple 1	21 24.8	2	21 25.7	6	
	6 Complex	21 29.2	3.5	21 31.4	220	
	2 Simple 2	21 36.4	1.5	21 36.8	12	
30	1 Simple 1	12 16.5	5	12 18.5	6	
30	8 Group (2)	14 22.2	6.3			
	2 Simple 2	14 22.2	1	14 22.4	9	
	2 Simple 2	14 26	2.5	14 26.8	52	
30	3 Simple 3	14 57	30	15 01	7	
30	2 Simple 2	15 39.3	2	15 40	58	
30	6 Complex	15 50.5	2.5	15 51.8	12	
30	2 Simple 2	15 59	3	16 00.5	18	
30	1 Simple 1	17 12.2	0.7	17 12.4	7	
30	2 Simple 2	17 20.4	1.5	17 20.8	24	
30	3 Simple 3 A f	17 45	1 45	indet.	17	
	8 Group (4)	17 49	23.8			
	2 Simple 2	17 49	3	17 49.5	44	
	2 Simple 2	17 55.3	3.5	17 56.2	71	
	6 Complex	18 03	1.5	18 04	20	
	1 Simple 1	18 10.8	2	18 11.1	7	
	2 Simple 2	18 59	1.5	18 59.5	8	
	2 Simple 2	19 08	1.5	19 08.3	22	
30	3 Simple 3 f A	19 55	1 25	indet.	15	
	Simple 2	20 57.3	2	20 57.8	23	
30	2 Simple 2 f	21 57.5	5	21 58.3	22	
31	1 Simple 1	12 56	1.5	12 56.5	7	
31	2 Simple 2	14 40.5	2	14 41	42	
31	2 Simple 2	16 51.8	1.5	16 52.2	23	
31	2 Simple 2	17 29.2	1.5	17 29.6	14	
31	7 Period Irreg. Activity	19 30	45	19 43	10	

OTTAWA

2800 MC

HOURS OF OBSERVATIONS: JANUARY, FEBRUARY, MARCH 1958

OBSERVING PERIOD: January 1300 UT - 2120 UT (approx.)
 February 1250 UT - 2200 UT (approx.)
 March 1155 UT - 2245 UT (approx.)

with the following exceptions:

(1) Records obscured by interference:-

Jan. 6	1535 - 1545	1710 - 1800	1815 - 1840
9	2000 - 2050		
10	1950 - 2020		
Feb. 4	1815 - 1845		
6	2055 - 2100		
15	1930 - 2005		
23	1555 - 1620	1640 - 1700	
26	2010 - 2025		
Mar. 10	1840 - 1850		
12	1940 - 1950	2100 - 2110	
13	1835 - 1850	1910 - 1920	2050 - 2115
14	1925 - 2000	2020 - 2025	
16	1835 - 1855		
17	1840 - 1850	1915 - 1940	2000 - 2020
18	1720 - 1730		
22	1630 - 1640		
23	1730 - 1745	1755 - 1810	
24	1630 - 1700		
25	1830 - 1845		
28	1800 - 1815		
31	1750 - 1820		

(2) No observations:

Jan. 30	1600 - 1615	1630 - 1645	
Feb. 3	1705 - 1720		
5	1600 - 1615		
6	1520 - 1530		
7	1505 - 1525	1550 - 1600	1610 - 1625
20	1635 - 1645	1830 - 1850	
21	1605 - 1620		
22	1650 - 1715		
23	1625 - 1640		
24	1605 - 1620		
28	1450 - 1910		
Mar. 1	1605 - 1615		
21	1620 - 1635		

SOLAR RADIO EMISSION

DAILY DATA

MARCH 1958

CORNELL

200 MC

Mar. 1958	Flux Density $10^{-22} \text{w m}^{-2} (\text{c/s})^{-1}$			Variability 0 to 3			Observing Periods	
	Hours UT			Hours UT			Hours UT	
	12 15	15 18	18 21	12 15	15 18	18 21		
1	[[26	22]	--	[[2	2]	-	1355-1700	
2	[[14	14]	--	[[0	0]	-	1335-1715	
3	[[62	36	18	[[1	1	0	1350-2100	
4	[[13	15	15	[[0	1	1	1335-2110	
5	[[14	14	15	[[1	0	1	1340-2100	
6	[[16	19	19	[[1	1	1	1340-2100	
7	[[24	25	27	[[1	2	3	1340-2100	
8	[[36	40]	--	[[2	2]	-	1340-1700	
9	[[44	48]	--	[[2	1]	-	1310-1700	
10	[[54	61	46	[[1	1	1	1340-2100	
11	[[24	27	35	[[1	1	2	1330-2105	
12	[[35	40	36	[[2	2	1	1335-2100	
13	[[19	22	22	[[1	1	2	1330-2100	
14	[[12	13	12	[[1	1	1	1345-2100	
15	[[14	14]	--	[[0	0]	-	1315-1700	
16	[[12	12]	--	[[0	0]	-	1330-1700	
17	[[12	13	13	[[1	0	0	1345-2105	
18	[[16	13	13	[[1	0	0	1345-1450, 1520-2100	
19	[[12	21	17	[[3	3	2	1340-2100	
20	[[64	90	111	[[3	3	3	1330-2105	
21	[[60	47	39	[[1	2	2	1335-2110	
22	[[23	25	22	[[2	2	2	1345-2045	
23	[[34	28]	--	[[2	1]	-	1325-1700	
24	--	16	17	-	1	1	1520-2105	
25	[[32	33	34	[[1	1	1	1345-2100	
26	[[35	40	45	[[1	1	1	1350-1625, 1740-2100	
27	[[46	54	53	[[1	1	1	1330-2130	
28	[[52	44	42	[[1	1	1	1405-2100	
29	[[52	54]	--	[[3	3]	-	1300-1715	
30	[[58	100]	--	[[3	3]	-	1255-1700	
31	[[20	21	24	[[2	1	2	1340-2105	

COMMERCE - STANDARDS - BOULDER

[= first hour missing.

[[= first two hours missing.

] = last hour missing.

]] = last two hours missing.

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

CORNELL

MARCH 1958

200 MC

Mar. 1958	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22} \text{ W m}^{-2} (\text{c/s})^{-1}$		Remarks
						Inst.	Smooth	
3	0	1404		146	F			
	2	1754		1	CD	110	58	
	3	1803.5		.5	CD	>204	>142	
5	8	1732.5		2.5	CD	> 51	> 34	off-scale 1733-33.5, 1734-34.5 UT
	3	1843		.5	CD	> 51	> 32	
7	7	1558			E			
	8	1606		2	CA	> 58	> 26	off-scale 1607.5-08 UT
10	0	1517.5		50	SA			
	3	1642.5		.5	CD	>224	>104	off-scale
	3	2019.5		.5	CD	>204	>110	
11	2	1726.5		3	CA	> 54	> 18	
	2	1948		14	CA	> 54	> 16	
12	3	1906.5		1.5	CA	>233	>135	off-scale 1907.5 UT
13	0	1510		70	CA			
	0	1832		91	F			
14	8	1457		20	ECD	> 54	> 40	off-scale 1504.5 UT
	8	1940.5		10	ECD	> 52	> 37	off-scale 1945, 1946, 1948-50 UT
21	8	1750		2.5	CA	>217	>115	off-scale 1750-50.5 UT
	8	1940		5.5	CD	>224	>132	off-scale 1941-41.5, 1942-42.5, 1943, 1944.5 1945 UT
	2	2045		15	F			
22	0	1602		69	F	78	39	
24	8	1635		6	ECD	>190	>146	off-scale 1637-39 UT
	2	1722		12	E			
25	8	1413.5		2	ECD	>204	>109	off-scale
	3	1418.5		2.5	CD	>204	>115	off-scale 1419-19.5 UT
	3	1423	1423.5	1	CD	156	86	
	8	1817		1	CD	>196	>106	off-scale 1817.5-18 UT
	3	2008		2	CD	200	121	
26	3	1528		.5	CD	>204	>121	
28	7,4	1736.5		92	E			
	8	1836.5		3.5	CD	>240	> 84	off-scale
	2	2023		5.5	F			
	3	2023	2023.5	1.5	CD	>240	>134	
29	8	1631.5		2	ECA	>204	>104	
30	7	1318		92	F			
	0	1524.5		107.5	E			
31	7	1935		93	E			

SOLAR RADIO EMISSION

DAILY DATA

FEBRUARY 1958

BOULDER

167 MC

Feb. 1958	Flux Density $10^{-22} \text{ W m}^{-2} (\text{c/s})^{-1}$						Variability 0 to 3						Observing Periods	
	Hours UT					Day	Hours UT					Day	Hours UT	
	0 3	12 15	15 18	18 21	21 24		0 3	12 15	15 18	18 21	21 24			
1	-	-	-	-	18	-	-	-	0	1S	0	0	19.8-24.1	
2	-	-	20	19	19	20	-	-	1	0	0	0	14.2-24.1	
3	-	-	22	19	19	20	-	-	2	1S	1S	1S	14.2-24.1	
4	-	-	21	20	25	22	-	-	2	2	2	2	14.2-24.2	
5	-	-	39	39	56	43	-	-	3	2	3	3	14.2-16.4, 16.8-24.2	
6	-	-	141	224	205	188	-	-	1	1S	2	1S	14.7-24.2	
7	-	-	769	754	579	716	-	-	1	2	2S	2	14.1-24.2	
8	-	-	584	448	349	474	-	-	1	0	1S	1	14.1-24.2	
9	-	-	103	63	903	288	-	-	1	1	2	1	14.1-24.3	
10	-	-	147	38	30	76	-	-	1S	2S	2S	2S	14.0-24.3	
11	-	-	19	18	18	19	-	-	1	1S	1S	1S	14.0-24.3	
12	-	-	15	18	55	26	-	-	2	1S	2S	2S	14.0-24.3	
13	-	-	23	24	24	24	-	-	1S	2	2S	2S	14.0-24.3	
14	-	-	21	22	20	21	-	-	2	2S	2	2	13.9-24.3	
15	-	-	17	17	18	17	-	-	1S	0S	0S	0S	13.9-24.3	
16	-	-	17	18	19	18	-	-	1	1	2S	1	14.3-24.3	
17	-	-	20	19	19	19	-	-	1S	1S	0S	1S	13.9-24.3	
18	-	-	20	18	20	19	-	-	2S	2S	2S	2S	13.8-23.3	
19	-	-	17	17	23	19	-	-	2S	2S	2S	2S	14.2-24.4	
20	-	-	19	23	18	20	-	-	2S	2S	2S	2S	13.8-24.4	
21	-	-	18	18	18	18	-	-	1S	0S	0S	0S	13.8-24.5	
22	-	-	25	24	21	23	-	-	2S	1S	2S	2S	13.8-24.5	
23	-	-	53	32	45	43	-	-	3	2S	2S	2S	13.8-24.5	
24	-	-	108	109	106	108	-	-	2S	2	2S	2S	13.8-24.5	
25	-	-	187	252	273	237	-	-	2S	2	2	2	13.7-24.5	
26	-	-	457	431	326	405	-	-	2	2	2S	2	13.7-24.5	
27	-	-	321	348	315	328	-	-	2	2	2	2	14.3-24.6	
28	-	-	222	174	136	177	-	-	1	1S	2S	1S	13.6-24.6	

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES
FEBRUARY 1958

BOULDER

167 MC

Feb. 1958	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22} \text{ W m}^{-2} (\text{c/s})^{-1}$		Remarks
						Inst.	Smooth	
1	2	2334	2338.3	06 D	CD	120	-	B2258.9, 2323.8
2	1	1742	1748	13	MF	37	-	
3	1	1410 B	1448.4	595 D	CD	520 D	-	
3	3	1643.3	1643.3	01	ECD	500 D	-	
3	3	1723.1	1723.4	00.6	ECD	440 D	-	B(groups)1939, 2253
4	1	1410 B	1449	400 D	MF	1500 D	-	B1423.7, 1434.4, 1532.4
4	2	1509.9	1514.9	05.3	CD	1500 D	450 D	
4	2	1710.7	1714.1	14.8	ECD	1300 D	140	
4	6	2050	2308.9	200 D	CD	640 D	7	I 1626-1648
5	6	1410 B	1720	600 D	CD	1400 D	34	LB1706, 1750, 1923.7
5	3	1931.4	1931.9	00.9	CD	1000 D	-	N2
6	6	1440 B	2102.2	570 D	CD	1800 D	210	B1950.4, LB2336.0
7	6	1405 B	1711.5	605 D	CD	1800 D	790	N3
8	6	1405 B	1637.0	605 D	CD	1000 D	570	N4
9	6	1405 B	1431.0	430 D	CD	1100 D	100	
9	9	2115	I	175 D	CD	1900 D	910 D	N5, I 2215-2231
10	6	1400 B	2405.2	615 D	CD	1200 D	130	LB1415.6, B1437.1, 1520.4
10	8	1910	1912.2	03	ECD	1700 D	750 D	
10	2	2336	2336.9	02	CD	920 D	540 D	B2344, LB2414.5
11	1	1400 B	1449.2	615 D	F	280	-	S, B1408, 1509.6
12	3	1751.8	1752.0	00.8	ESD	830 D	-	B1555.1
12	1	1756	1758.5	264 D	F	120	-	
12	9	2220	2331.8	120 I	CD	1600 D	600 D	
13	1	1400 B	1712.5	620 D	MF	430 D	-	B(groups)2012, 2318
14	6	1430	1803.8	590 D	CD	830 D	5	

COMMERCE - STANDARDS - BOULDER

- Notes: 1. Interference may obscure or be mistaken for solar events. Relatively small events are not reported.
2. February 5, Bursts 1950.0, 2151.2, 2156.2, 2338.3, 2404.1.
3. February 7, Bursts 1905.4, 2003.8, Large Bursts 2153.2, 2316.7, 2336.9.
4. February 8, Bursts 1433.0, 2152.8, 2307.1, 2341.3, Large Bursts 1638.4, 2144.0.
5. February 9, Group of large bursts 1414-1420, Bursts 1708.3, 1852.9.

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

BOULDER

FEBRUARY 1958

167 MC

Feb. 1958	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22} \text{ w m}^{-2} (\text{c/s})^{-1}$		Remarks
						Inst.	Smooth	
14	3	1436.4	1436.4	00.3	ESD	1100 D	-	B2121.8, 2319.6, LB2341.8
14	3	2130.2	2130.2	00.7	ESD	680 D	-	
16	1	1420 B	2019.4	600 D	MF	93	-	
16	3	2248.8	2249.2	01.1	ECD	200	-	
17	1	1355 B	1801.8	625 D	MF	73	-	S
18	1	1350 B	2102.1	567 D	MF	750 D	-	S, B1403.4, 1409.0, 2112.3
18	8	1538	1539.9	04	ECD	340	100	
18	8	1619	1622.9	07 I	ECD	250	49	S, B2038.2, 2133.5, 2333.6
19	1	1410 B	1633.2	410 D	MF	170	-	
19	6	2100	2253	205 D	CD	310	8	
20	1	1350 B	1521.0	190 D	MF	200	-	S
20	6	1700	2118.5	445 D	CD	500 D	9	S, LB1907.0
21	1	1345 B	1721.9	645 D	MF	110	-	S
22	6	1345 B	1437.8	645 D	CD	210	8	S, B1708.6
23	6	1345 B	1355.1	645 D	CD	770 D	36	N6
24	6	1345 B	-	645 D	CD	1200 D	110	N7
25	6	1340 B	1800 X	650 D	CD	1300 D	270	
26	6	1340 B	1600 X	650 D	CD	1200 D	440	
27	6	1415 B	2100 X	620 D	CD	1200 D	340	
28	6	1335 B	1420.9	660 D	CD	950 D	200	

COMMERCE - STANDARDS - BOULDER

- Notes: 6. February 23, Large bursts 1357, 1426.4, 1550.8, 1555.4, 1642.1.
 7. February 24, Two large bursts occurred at 1914.0, 1941.8, either of which could be considered the maximum. Other large bursts 1749.9, 1916.6.

SOLAR RADIO EMISSION

DAILY DATA
FEBRUARY 1958

BOULDER

470 MC

Feb. 1958	Flux Density $10^{-22} \text{ w m}^{-2} (\text{c/s})^{-1}$						Variability 0 to 3						Observing Periods
	Hours UT					Day	Hours UT					Day	Hours UT
	0 3	12 15	15 18	18 21	21 24		0 3	12 15	15 18	18 21	21 24		
1	-	-	88	88	95	90	-	-	0	0	0	0	14.2-24.1
2	-	-	81	80	80	80	-	-	0	0	0	0	14.2-24.1
3	-	-	81	80	80	80	-	-	0	0	OS	0	14.2-24.1
4	-	-	80	80	81	81	-	-	1	0	0	0	14.2-24.2
5	-	-	81	81	82	81	-	-	0	1	1	1	14.2-24.2
6	-	-	82	82	82	82	-	-	0	0	OS	0	14.9-24.2
7	-	-	82	82	82	82	-	-	0	1	2	1	14.1-24.2
8	-	-	81	81	81	81	-	-	2	0	0	1	14.1-24.2
9	-	-	81	81	161	101	-	-	0	0	3	2	14.1-24.3
10	-	-	81	81	81	81	-	-	0	2	1	1	14.1-24.3
11	-	-	81	81	81	81	-	-	0	0	0	0	14.0-24.3
12	-	-	80	80	81	80	-	-	0	0	0	0	14.0-24.3
13	-	-	81	81	81	81	-	-	OS	0	OS	OS	14.0-24.3
14	-	-	80	81	81	81	-	-	0	0	0	0	13.9-24.3
15	-	-	81	81	81	81	-	-	0	0	0	0	13.9-24.3
16	-	-	80	81	80	80	-	-	0	0	0	0	14.4-24.3
17	-	-	80	80	80	80	-	-	0	0	0	0	13.9-24.4
18	-	-	81	80	80	80	-	-	0	0	0	0	13.8-24.4
19	-	-	81	80	-	81	-	-	0	OS	OS	OS	13.8-24.4
20	-	-	-	80	80	80	-	-	OS	OS	OS	OS	13.8-21.0, 21.5-24.4
21	-	-	81	80	81	81	-	-	OS	OS	OS	OS	13.8-24.5
22	-	-	81	80	81	81	-	-	OS	OS	OS	OS	13.8-24.5
23	-	-	81	81	81	81	-	-	0	OS	0	0	13.8-24.5
24	-	-	81	81	81	81	-	-	OS	OS	OS	OS	13.8-24.5
25	-	-	81	-	81	81	-	-	OS	-	OS	OS	13.7-16.9, 22.0-24.5
26	-	-	81	81	81	81	-	-	OS	OS	OS	OS	13.7-24.5
27	-	-	81	81	81	81	-	-	0	OS	18	OS	13.7-15.1, 16.2-24.5
28	-	-	81	81	81	81	-	-	OS	OS	OS	OS	13.6-24.5

SOLAR RADIO EMISSION
OUTSTANDING OCCURRENCES

BOULDER

FEBRUARY 1958

470 MC

Feb. 1958	Type Ap.J	Start UT	Time of Maximum	Duration Minutes	Type IAU	Max. Flux Density $10^{-22} \text{ W m}^{-2} (\text{c/s})^{-1}$		Remarks
						Inst.	Smooth	
4	1	1410 B	1514.9	595 D	MF	200	-	N2, N3
5	1	1410 B	2308.1	595 D	MF	270	-	
5	2	1929 B	1929.4	0.6 I	CD	970	-	
6	1	1453 B	1803.4	557 D	F	150	-	N4
7	1	1405 B	2007.8	605 D	MF	560	-	
7	2	2102.1	2102.6	02.2	ECD	980	120	
7	3	2331.7	2331.8	00.2	ECD	440	-	N5
8	2	1632	1638.6	08	CD	810	90	
9	1	1405 B	1419.9	427 D	MF	590	-	
9	9	2112	2204.3	133	CD	2300 D	230	
10	3	1859.4	1859.5	00.5	ECD	2500 D	-	
10	8	1904	1906.5	21	CD	280	10	
10	1	2115	2242.4	105	MF	130	-	
10	8	2200	2202.2	03.7	ECD	210	100	
12	0	2229 B	2238.4	15 I	CD	130	-	
24	1	1345 B	2155.8	645 D	MF	170	-	S, N6
27	2	2200.6	2205.7	05.2	CD	490	-	

COMMERCE - STANDARDS - BOULDER

- Notes: 1. Interference may occasionally obscure or be mistaken for solar events.
 2. February 3, small burst at 1648.7.
 3. February 4, burst at 1434.3.
 4. February 7, small groups of bursts at 2253 and 2336.
 5. February 8, large burst 1414.3.
 6. February 25, Probable type "1" or "MF" all day

GEOMAGNETIC ACTIVITY INDICES

FEBRUARY 1958

Feb. 1958	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	0.4	3-	1-	2+	2+	3o	1+	2-	3-	17-	9	Five Quiet	
2	0.4	3-	2+	3-	3o	2+	1+	2-	0+	16+	9		
3	0.2	1-	1+	1o	1+	3o	1+	2o	2o	13-	6		
4	1.1	3-	0+	1o	3o	4-	3+	5-	4-	22+	17		3
5	1.4	3+	4+	4-	4o	5-	4-	5-	5-	33o	30		15
6	1.3	4o	4+	4+	4+	4+	5-	3o	4+	33+	30	24	
7	1.2	4o	4-	4o	4o	3+	4o	4o	4o	31o	25	25	
8	1.2	4-	5-	4o	4o	4-	4-	4o	4o	32-	27	26	
9	1.0	4o	4o	2o	3-	3-	3+	4o	3o	26-	18		
10	1.2	4o	4-	2-	2o	2+	5o	5-	4+	28-	24		
11	2.0	9o	8+	9-	8+	8o	5+	6o	6o	60-	199	Five Disturbed	
12	1.8	6o	6-	6+	5+	4o	5-	6o	4+	42+	59		
13	1.0	4-	2-	3+	4-	4+	4-	3o	2+	26-	18		
14	1.2	4o	5o	4o	3o	3+	4+	2+	2o	28o	23		6
15	0.5	2-	1o	1o	2+	2+	3-	2+	3-	16o	8		11
16	0.9	2+	1-	1+	3+	3o	4o	3+	3o	21o	14	12	
17	1.3	4o	5-	4o	4-	5-	4o	5-	4o	34-	31	17	
18	1.3	4o	5o	4+	4+	4o	3+	5o	4-	34-	32	18	
19	1.1	4+	4-	5-	4-	3+	3o	4o	4-	30+	25		
20	1.2	4-	4o	3o	4o	4o	3o	5-	5-	31o	26		
21	1.3	3+	5-	4+	4-	4+	3o	5-	5o	33o	31	Ten Quiet	
22	1.1	5-	4o	4-	4o	4-	3o	4-	4o	31-	25		
23	0.9	4+	4o	4o	4-	3o	3+	3o	3-	28o	21		
24	0.3	2+	3-	2o	3-	3-	2-	2-	1-	16+	8		1
25	0.2	1-	2o	3-	2o	1-	1-	1+	1-	11-	5		2
26	0.2	2o	2o	3-	2o	1+	1o	2-	1+	14o	7	3	
27	0.5	3-	1o	1o	1o	2-	2o	3+	4-	16+	10	15	
28	0.8	2o	2+	3+	4o	4+	3-	2+	2o	23o	15	16	
												24	
												25	
												26	
												27	
												28	
Mean:	0.96									Mean:	27		

(Ks from Wingst and Göttingen till 1958 March. 25)

▲ = sudden commencement

KEY

Number of points in the intersection	Number of sets
0	1
1	2
2	3
3	4
4	10
5	6
6	4
7	3
8	2
9	1

J.B.

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH ATLANTIC
FEBRUARY 1958

Feb. 1958	North Atlantic 6-hourly quality figures				Short-term forecasts issued about one hour in advance of:				Whole day index	Advance forecasts (J-reports) for whole day; issued in advance by:			Geomag- netic K _{Fr}	
	00 to 06	06 to 12	12 to 18	18 to 24	00	06	12	18		1-4 days	4-7 days	8-25 days	Half Day (1) (2)	
1	7-	7-	7o	7o	7	7	7	7	7o	7	7		2	2
2	6+	7-	7o	7o	7	7	7	7	7-	7	7		3	1
3	7o	7-	7o	7+	7	7	7	7	7o	7	7		1	2
4	7o	7-	7o	6o	7	7	7	7	7-	7	7		2	3
5	5+	5o	7o	6o	6	5	6	6	6-	7	7		(4)	(4)
6	6-	6-	7-	6o	6	6	7	6	6o	7	7		(4)	(4)
7	6o	6-	7-	6o	6	6	7	6	6+	6	7		3	3
8	6+	7-	7-	6+	6	6	7	7	7-	6	7		(4)	(4)
9	6+	6+	7-	6o	6	7	7	7	6+	6	7		3	3
10	7-	7-	6+	5-	7	7	7	6	6o	6	7		3	3
11	3-	1+	3o	3+	6	2	3	3	(3-)	6	6		(9)	(6)
12	3+	4o	6+	6-	3	2	5	5	(4+)	5	7		(5)	(5)
13	6+	6+	7-	6+	5	6	7	6	6+	4	7		3	3
14	6+	6+	7-	6+	6	6	6	6	6+	6	4		3	2
15	6+	7-	7o	7-	6	6	6	6	7-	6	6		1	2
16	7-	7-	7-	7o	6	6	7	6	7-	6	6		1	3
17	7-	6+	7-	6-	6	6	6	6	6+	7	6		(4)	(4)
18	5+	5o	6+	6-	5	5	6	5	6-	6	7		(4)	3
19	6o	6o	7-	6+	5	6	6	6	6+	6	7		(4)	3
20	6-	6+	7o	6+	6	6	6	6	6+	6	7		3	3
21	6-	6o	7o	6o	6	5	6	6	6+	6	6		(4)	3
22	6-	6+	7o	6+	6	5	7	6	6+	6	6		3	3
23	6-	6o	7o	7-	6	6	7	6	6+	6	6		(4)	3
24	6o	7-	7o	7o	6	6	7	7	7-	6	6		2	2
25	7o	7-	7+	7+	7	7	7	7	7o	7	6		2	1
26	7o	7o	7o	7o	7	7	7	7	7o	7	6		2	2
27	7o	7o	7o	7o	7	7	7	7	7o	7	6		1	3
28	7-	7-	7o	7o	7	7	7	7	7-	7	7		3	3
Score: Quiet Periods														
					P	20	19	18	18				18	10
					S	6	7	9	9				7	15
					U	0	0	0	0				0	0
					F	0	0	0	0				1	1
Disturbed Periods														
					P	1	0	1	1				0	0
					S	0	1	0	0				1	0
					U	0	1	0	0				0	0
					F	1	0	0	0				1	2

() represent disturbed values.

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

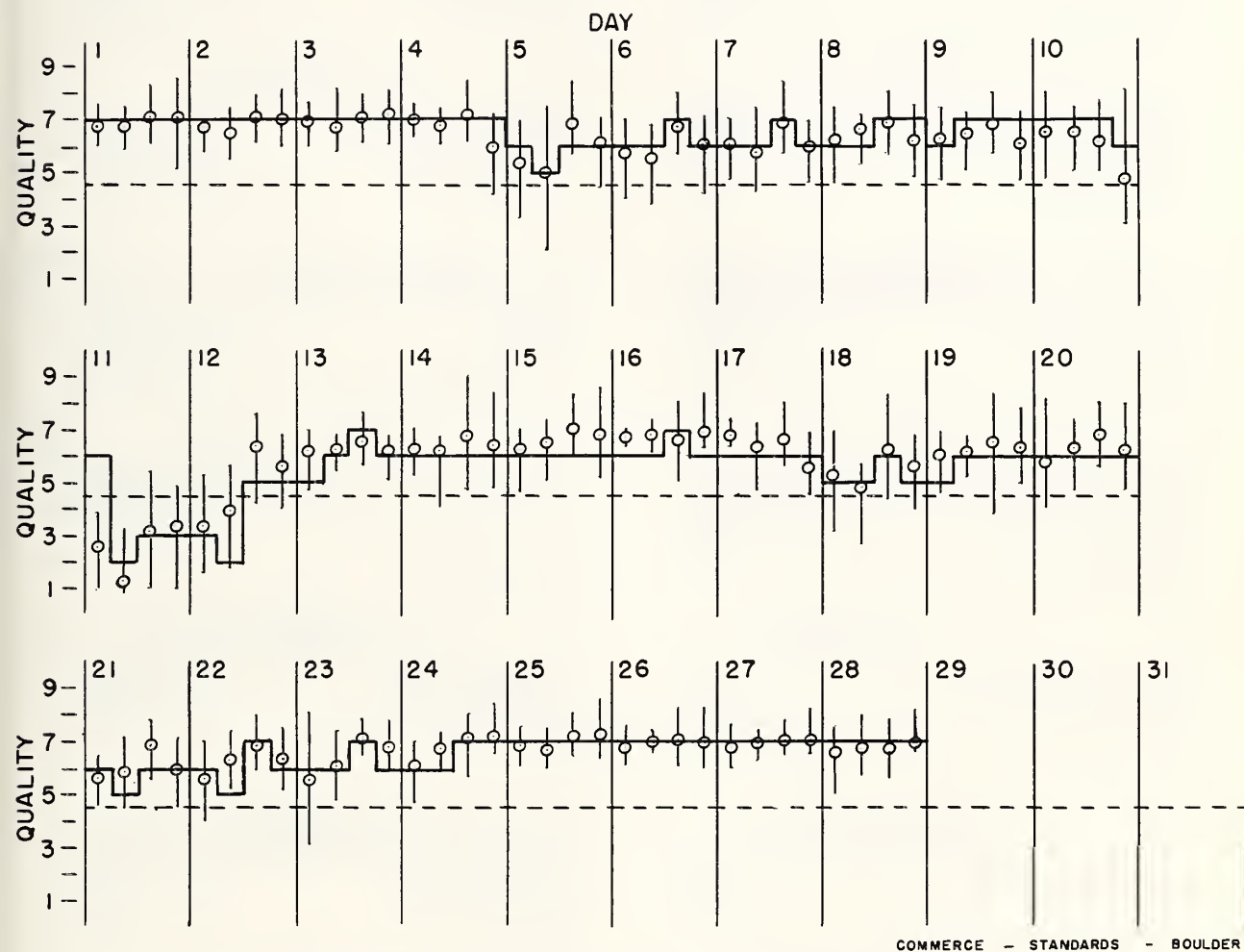
NORTH ATLANTIC

FEBRUARY 1958

— Short-term forecast

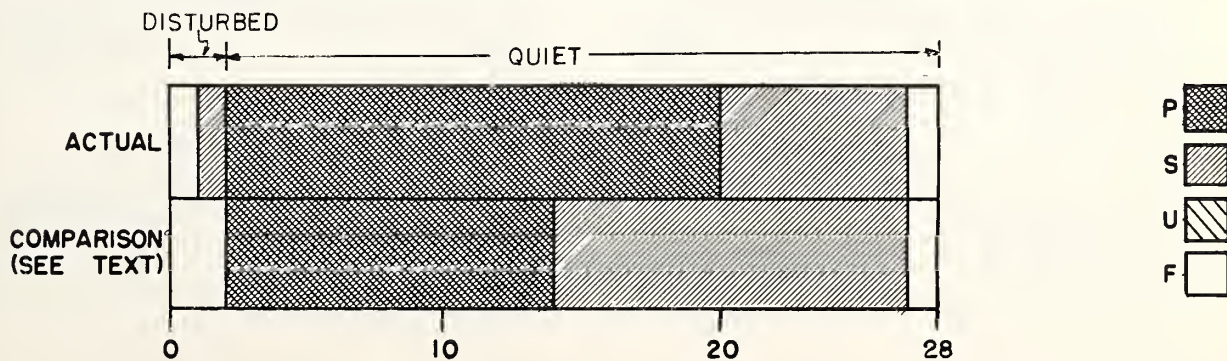
| Range of reports

○ Quality figure



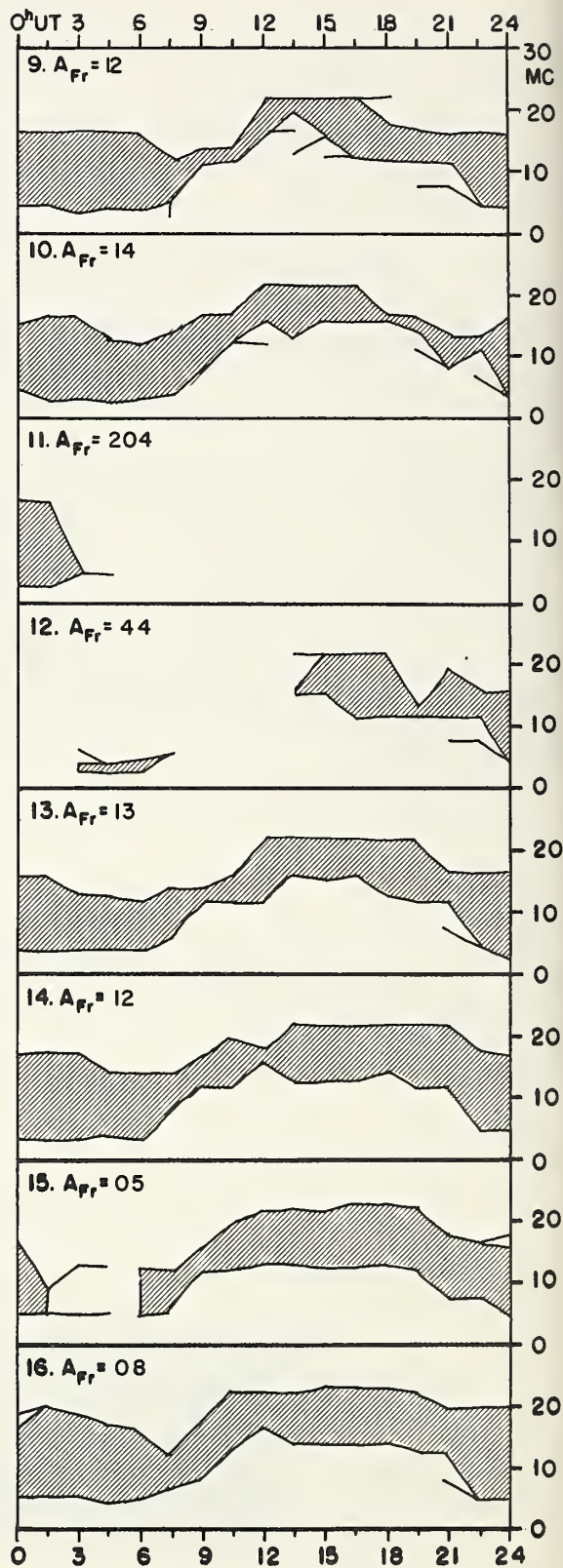
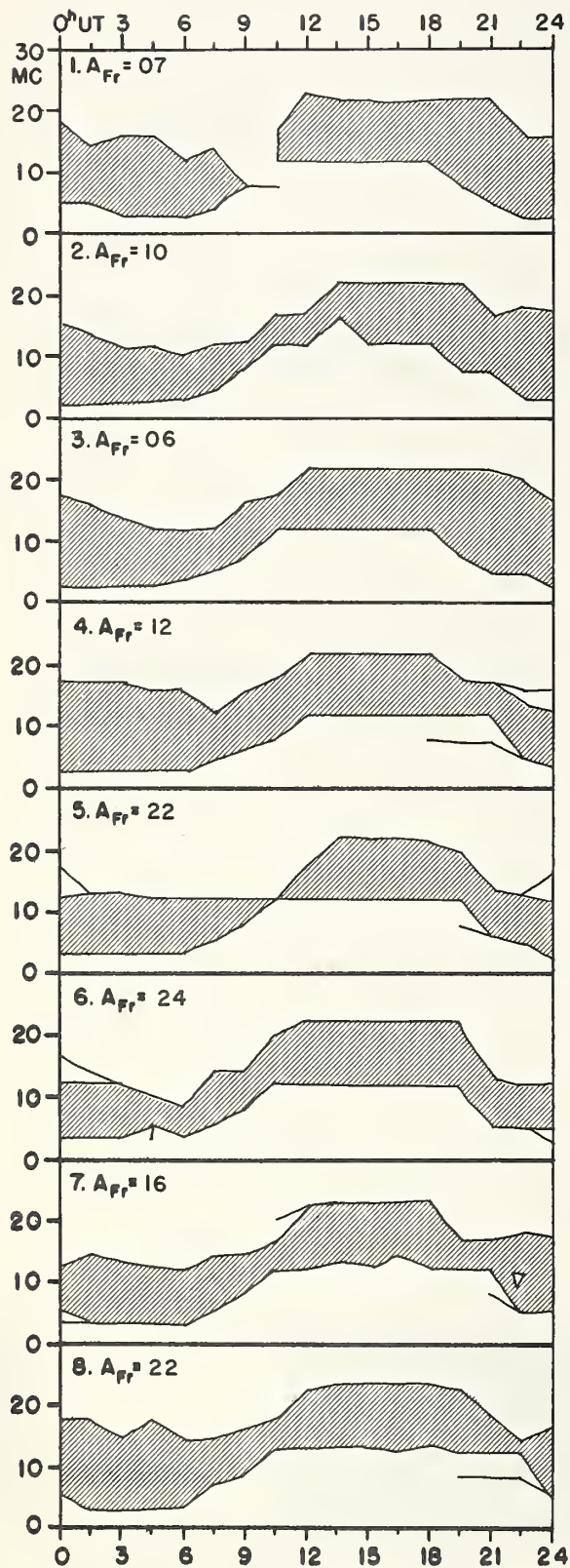
OUTCOME OF ADVANCED FORECASTS

1 TO 4 DAYS AHEAD

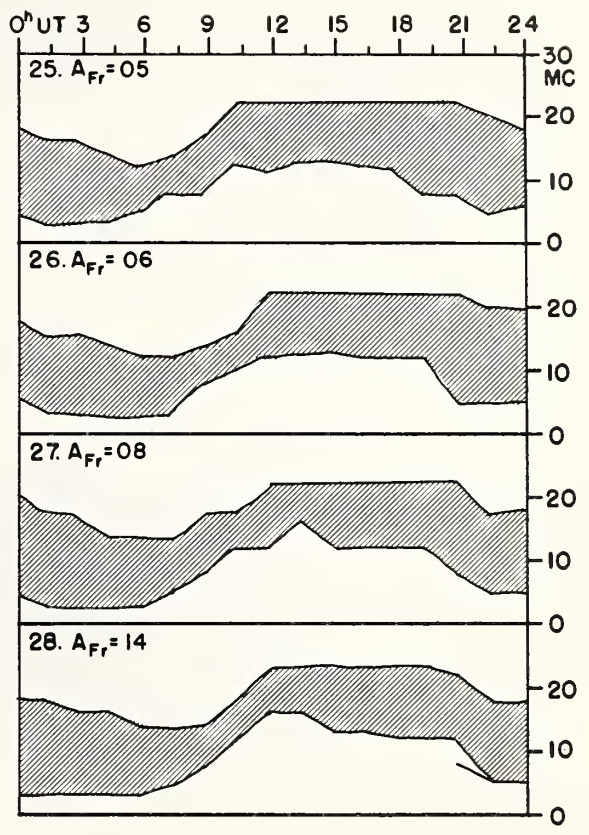
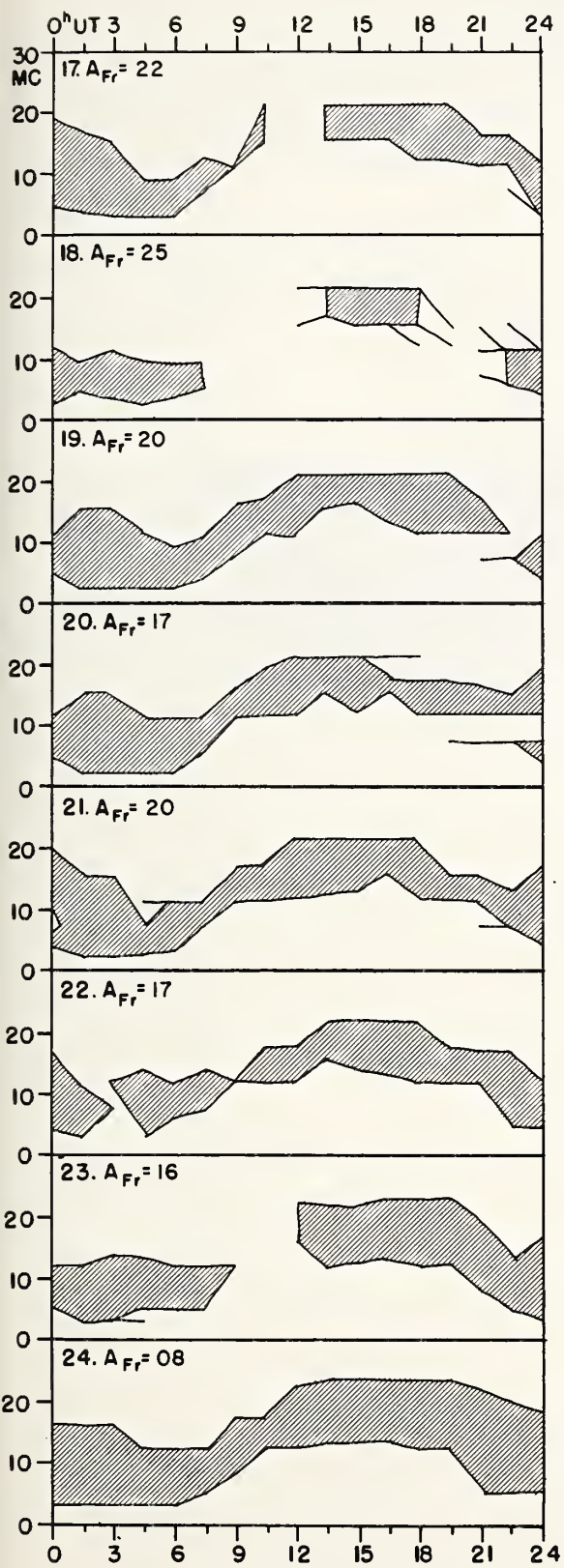


USEFUL FREQUENCY RANGES -- NORTH ATLANTIC PATH

FEBRUARY 1958



FEBRUARY 1958



COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS

NORTH PACIFIC

FEBRUARY 1958

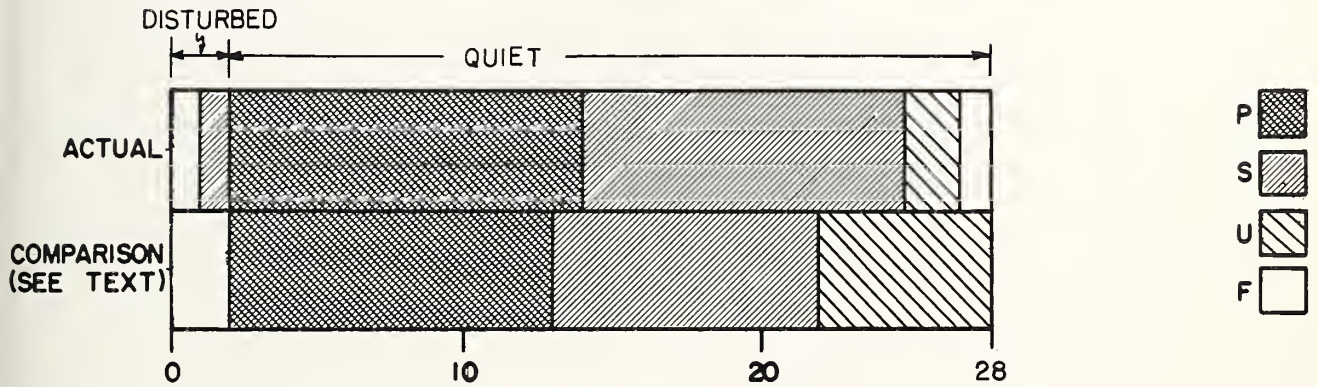
Feb. 1958	North Pacific 8-hourly quality figures			Short-term fore- casts issued at			Whole day index	Advance forecasts (Jp reports) for whole day; issued in advance by:			Geomag- netic K _{S1}	
	03 to 11	11 to 19	19 to 03	02	10	18		1-4 days	4-7 days	8-25 days	Half Day (1) (2)	
1	6	5	6	6	7	6	6	7	7		2	2
2	6	6	7	6	6	6	7	6	7		2	2
3	6	6	7	7	6	6	6	6	7		0	2
4	6	5	7	6	7	6	6	7	7		1	3
5	6	5	6	6	5	6	6	6	7		(4)	(5)
6	6	5	5	6	5	6	5	6	7		(4)	(4)
7	6	6	6	5	5	5	6	6	7		(4)	(4)
8	5	5	6	6	5	6	5	5	6		(4)	(4)
9	5	6	5	6	6	6	5	5	6		2	3
10	5	5	4	5	5	5	5	6	6		2	(4)
11	2	2	4	3	2	3	(2)	6	6		(9)	(6)
12	3	4	6	3	4	3	(4)	3	6		(6)	(5)
13	6	5	7	5	5	6	6	4	6		3	(4)
14	6	5	6	6	6	6	6	6	6		(4)	3
15	5	6	6	6	5	6	6	6	6		1	2
16	6	5	6	6	6	6	6	6	6		2	3
17	7	4	6	6	6	5	5	7	6		(4)	(4)
18	5	5	5	6	6	6	5	7	6		(4)	(4)
19	6	6	6	5	5	6	6	5	7		(4)	(4)
20	6	6	6	5	6	6	6	6	7		3	(4)
21	6	5	6	6	6	6	6	6	7		(4)	(4)
22	6	5	6	5	5	6	6	5	7		(4)	3
23	5	5	6	6	4	6	6	5	7		(4)	2
24	5	5	6	6	5	6	6	5	7		2	2
25	6	6	7	6	6	7	6	6	7		1	1
26	6	6	8	6	6	7	7	6	6		1	2
27	7	6	6	6	7	7	7	6	6		0	2
28	6	6	7	6	6	6	6	6	6		3	3
Score: Quiet Periods P 12 14 13 12 6												
S 14 9 12 11 19												
U 0 2 0 2 1												
F 0 0 1 1 0												
Disturbed Periods P 1 2 0 0 0												
S 1 0 2 1 0												
U 0 0 0 0 0												
F 0 1 0 1 2												

() represent disturbed values.

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS
NORTH PACIFIC
FEBRUARY 1958

OUTCOME OF ADVANCED FORECASTS

1 TO 4 DAYS AHEAD



ALERT PERIODS AND SPECIAL WORLD INTERVALS

Alert Issued Ends 1600 UT 1600 UT	SWI Issued Ends 0001 UT 2400 UT	A _{Be} On Days of Alert Period (SWI Underlined)	Number of Flares of IMP \geq 2 Reported Promptly on Days of Alert Period
1958			
Mar 02-Mar 07	Mar 05-Mar 05	09-21-27- <u>31</u> -31-20	0-1-0-0-0-1
Mar 12-Mar 13		44- <u>38</u>	2-0
Mar 14-Mar 16	Mar 15-Mar 15	16- <u>24</u> -19	1-0-0
Mar 20-Apr 01	Mar 23-Mar 25	23-33-22- <u>16</u> - <u>16</u> - <u>24</u> -18-	8-3-0-3-2-7-1-
	Mar 30-Mar 31	-16-12-10- <u>27</u> - <u>14</u> -20	-6-9-2-9-2-1

COMMERCE - STANDARDS - BOULDER

